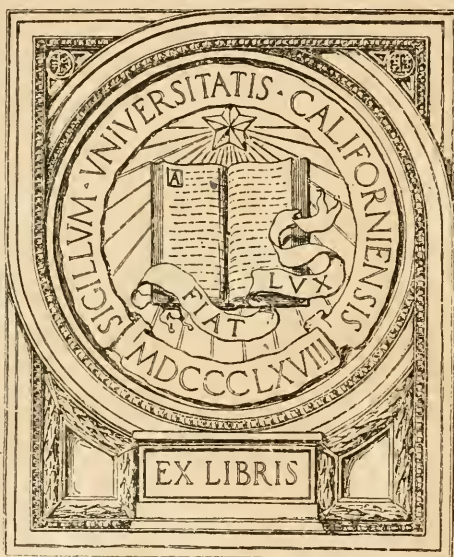


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The
German Cotton Industry

A REPORT

To the Electors of the Gartside Scholarships

BY

R. M. R. DEHN, B.A.,
Gartside Scholar

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PREFACE.

THE author wishes to take this opportunity of thanking the many gentlemen who, generous of time and trouble, assisted him in the collection of material for the present report during his travels in Germany, and also Professor S. J. Chapman, Dean of the Faculty of Commerce of the University of Manchester, for his invaluable help and advice in the arrangement of the report.

R. M. R. DEHN.

MANCHESTER,

25th February 1913.

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CHAPTER I.

HISTORICAL INTRODUCTION.

THE Lancashire Cotton Industry with its intricate machinery for dealing with its raw material, its highly specialized production and strict local concentration, its comprehensive organization of employers and employed, its army of exporters and wholesalers, finally its complete self-containedness, is the result of economic forces functioning unrestrainedly for three centuries. No civil war interrupted its development after the Great Rebellion. No foreign invader disturbed it. No religious or national rivalries split it into factions. Neither violent changes in its markets nor sudden accretions to its competition tested it until it was full-grown. True, obstacles in the shape of legislative restrictions and the obstinate conservatism of the operatives have not been wanting, but these, like the severest commercial crises, proved impotent to check the vigorous growth of an industry, which, having in a congenial environment found enterprising and inventive "entrepreneurs" and workpeople, was destined to conquer the world.

In Germany the story of cotton is both longer and more eventful. During the fourteenth century, two hundred years before Flemish refugees came to Lancashire, Ulm was already winning a high reputation for the "barchent" (a cloth woven of linen warp and cotton weft) for which her merchant princes found a market in the most distant places. At Augsburg a little later the Fuggers as barchent-weavers and later as merchants laid the foundations of a fortune with which they long controlled European finance. Naturally enough the wealth acquired by these two towns soon brought competitors into the field

and the industry spread to Alsace and along the Northern trade-route to Nürnberg, Hof, Zwickau, Leipzig and Chemnitz, towns which have all left records of cotton-spinning and weaving before the Thirty Years War. When the war broke out Germany was far ahead of all European countries in cotton manufacture.

The raw cotton came in these early days from Cyprus and later also from Syria and Brazil and was carried from Venice to Southern Germany across the Brenner. Arrived at its destination it had to pass a double "Schau" or inspection to test its quality and humidity before being admitted to the commerce of the town. It was then handed by the merchants to wool-carders to be cleaned and loosened and then later distributed to the cottagers to be spun and woven. Finally, after the cloth had undergone a finishing process, consisting usually of raising, it was subjected to a second inspection before it received the stamp of the town and passed into the open market with this trade-mark. The weavers also were subjected to strict control and bound to observe the conditions of their guild by an oath annually renewed. Thus at the beginning the raw material remained, throughout, the property of the merchants, for whom all the processes it had to go through were done on commission. Later, however, the weavers themselves used to buy the cotton from the merchants and act as independent manufacturers supplying the dealers direct.

This short sketch must suffice to indicate the character of the first German cotton industry, which was all but wiped out by the Thirty Years' War. Recovery from the ravages of the war was slow and it was not until the 18th century that with renewed industrial activity in Saxony the real work of re-construction began. This second industry was again strictly controlled by the guilds, and free competition was further restricted by the practice of granting monopolies for certain areas to intending manufacturers. Barchent was still an important article;

but before the first machines were set up, piqués, muslins and cottonades were all being produced, and hosiery making had gained a firm footing. More important still, the art of calico-printing was introduced from Switzerland and Holland about 1750 and was soon being carried on in Alsace, Saxony, Bavaria, on the Lower Rhine, and, strange as it now seems, in the Hanse towns, among which at the end of the 18th century Hamburg had more print works than any other town in Germany. The cloth printed was at first mainly of eastern origin, but in course of time the print works, if they had not themselves sought textile districts, called into existence flourishing weaving industries to supply their needs.

The second period—a period partly of reconstruction, partly of the introduction of new articles and processes—ends with the year 1782, when at Ernstthal in Saxony Hieronymus Lange set up the first spinning machinery on German soil. This was manufactured in Saxony after French designs. In the following year an Elberfeld merchant set up a mill driven by water-power near Düsseldorf and named the resulting village Cromford. In Alsace the first machines appeared in 1803 at Wessertling. The German weaving industry too resorted to machinery comparatively early, and in 1790 there were fifty power-loom running at Mittweida in Saxony. In the more general abandonment of primitive methods, however, the two branches of the industry diverged considerably. Spinning had previously been of subsidiary importance, carried on by flax-spinners here and there, while most of the yarns had been imported from England. In other words, a spinning industry had not previously existed and was able to offer fresh employment. The power-loom on the other hand threatened to rob a large and organized class of weavers, if not of their sole means of subsistence, yet of a considerable portion of their earnings. Add to this that Napoleon's "Continental System" suddenly cut off the German cotton

industry from its principal source of yarn and made it imperative that it should meet its requirements itself, and it is sufficiently explained why the introduction of spinning machines was both easier and more rapid than the introduction of the power-loom. The great difficulty was obtaining the machines, for until the middle of the 19th century heavy penalties threatened all who attempted to carry machinery or even drawings out of England. The records which exist of heavy penalties imposed on Germans at this period for making the attempt show that courage and enterprise at least were not wanting on their part. But this was not the only obstacle. While Napoleon had, as has been shown, given the impetus to the introduction of spinning machinery, the unrest which his campaigns occasioned throughout the continent was highly unfavourable to trade. Even after his fall and after the introduction of the first Prussian tariff of 1 Thaler per 100 lb. of yarn had helped to surmount the crisis which the abolition of the "Continental System" occasioned, the lack of homogeneity in the laws, coinages and weights and measures of the German states, the multifarious tariffs, the inadequate credit facilities and the general lack of organization manifest in every branch of commerce, all militated against a healthy development.

The Zollverein of 1834 at last brought much-needed relief. It did away with tariff boundaries in the Empire and while doubling the duty on imported yarns and abolishing that on raw cotton, regulated the tariff relations of Germany to the outside world on a uniform basis. From this moment too, private capital began to flow into the cotton industry and limited companies began to spring up, enterprises which were furthered by steady demand in the succeeding years and by the improved transport-facilities afforded by the first railways. Up to 1840 this expansion took place mainly in Saxony, which for some years to come contained well over half the

spindles in Germany. Then from 1850 onwards there was a very marked growth in the South of Germany, particularly in Würtemberg, where the spindleage increased from 37,000 to 237,000 between 1852 and 1862. The impetus to this development was given by King William, who called upon his minister of finance to induce a Swiss spinner, with experience of exploiting water-power, to build mills in his kingdom. Other Swiss firms followed and all survive as limited companies to this day. In Bavaria these years saw the foundation of the Spinnerei am Stadtbach at Augsburg and of concerns at Bamberg, Bayreuth, Kolbermoor and Kempten, which are now, as they were then, among the most important in Germany. All but one of these mills were water-driven.

The American War interrupted but did not stop the advance. It had, moreover, two important effects on the future development of the industry. Firstly the failure of the American supplies caused a great deal of machinery to be adapted to the shorter staple of Indian cotton, which still composes nearly one-quarter of Germany's cotton imports. Secondly the resulting crisis not only weeded out a number of financially weak undertakings but by inducing many thousands of hand-weavers to seek other occupations rendered the introduction of the power-loom imperative, when a rising demand had to be satisfied. Before the war the number of hand-loom had been 264,500 compared with only 23,500 power-loom. No wonder that it was not yet recognized that the hand-loom had not long to live and that when in the fifties a lively demand from the States caused a rise in piece-rates, thousands of young men and women learnt a craft which they were only allowed to exercise for a few short years.

The consolidation of the German Empire marks the beginning of yet another epoch. It brought the cotton industry all the advantages which it brought German commerce and industry as a whole—a uniform currency, uniform weights and measures, the gold of the war-

indemnity and many others, less tangible though no less real. But the speculative spirit which was abroad was effectively counteracted here by grave problems raised by the acquisition of Alsace and Lorraine. This meant a sudden increase of 56 per cent. to the spindles, of 86 per cent. to the power-looms and of 100 per cent. to the calico-printing machines of Germany. If effective steps were not taken, not alone the German manufacturers were threatened with ruin. The Alsatians were suddenly cut from their market and robbed of the high protective duties they had had for their fine counts. They were to be compelled to force their way against national prejudices in a foreign country with its own industry and with banking facilities and conditions of credit far less favourable than those they had previously enjoyed. It was impossible not to recognize the dangers of the position, and they were effectively presented to the negotiators at Versailles by Germans and Alsatians alike. The result was that by the treaty of peace Alsatian cotton goods were to be admitted to France at one-quarter and later at half of the French duties up to the end of 1872. These facilities proved, however, to be of too short duration, although they lasted long enough to allow the Alsatians to adapt themselves to the German tariff and go over to the coarser counts which alone could be profitably spun behind it. Strong representations were again made to the government, this time for a tariff sufficiently high to induce the Alsatians to return to their higher counts and to prevent the flooding of the German market with English yarns in time of depression in Lancashire. The result was the appointment of a Commission in 1878 to investigate the cotton and linen industries with a view to determining under what disabilities they laboured and what amount of protection they required. The conclusions of the investigation were crystallized into a tariff laid before the Reichstag in 1879 and passed with some alterations. The duty, now for the first time made to rise

with the count of yarn, was henceforth to be 12M per 100Kg. for all counts up to 17s, rising to 36M. for all counts over 79s. The duty on fabrics was similarly graduated. These rates were not superseded until the tariff of December 25th 1902, which is still in force and which, while it lowered the rates for yarns below 17s., raised them for those over 100s. For fabrics the duty was made to vary according to the weight and density. Thanks to the increase in industrial efficiency the coarse and medium counts could dispense with some of the duty, but more encouragement was needed to induce spinners to revive fine-spinning than the tariff of 1879 had afforded.

On the occasion of each of the revisions the main difficulty was the holding of the balance between spinners and weavers. The spinners complained that they could not spin fine counts unless English and Swiss competition were more effectively excluded, the weavers that they could not compete in the world's markets while their raw material either yielded inflated profits to producers or paid an unreasonable duty at the frontier. Moreover they charged the spinners with neglecting fine-spinning in spite of the opportunities afforded them. Various suggestions for a compromise by means of a system of drawbacks had been made, but the impossibility of the identification of imported yarn and the strictness of control which would therefore be necessary have proved fatal to their acceptance. Quite recently again a number of chambers of commerce in Rhenish Prussia have presented a joint petition to the Federal Council for the temporary admission duty-free of certain qualities of yarn which it is asserted cannot be made in Germany. On the whole the working of the present tariff is not unsatisfactory. It is true that the moment when Germany will be able to compete with Lancashire in staple articles must still be regarded as far distant. But at least two desirable movements have lately become dis-

cernible. On the one hand there are signs of the long looked-for revival of fine-spinning, and on the other, German enterprise, by concentrating on those articles for which either the Germans can boast exceptional aptitude (such as hosiery and embroidery) or those in which taste or ingenuity commands a monopoly price, is finding its way into the channels most suitable for a country which cannot buy its raw materials in the cheapest market.

In the interval between the two last tariffs the most important development has been in Westphalia, where a great spinning and weaving industry has sprung up at Rheine on the basis of a hand-weaving population and the greatest spinning-centre of Germany has arisen in and around Gronau, thanks to the enterprise of Dutch capitalists. In more recent years a number of new industries have been taken up with considerable success in Saxony, employing machinery partly of English partly of German manufacture. Chief among these are curtain- and plain-net-making. In this way Germany has moved ever nearer to the ideal of covering her whole demand for cotton-goods herself, until to-day every branch of the industry of any importance is represented on German soil.

The verdict of Lancashire on the present achievements of continental cotton manufacturers savours generally of the unsympathetic school-master's report on a backward pupil. It takes little account of the praise due for difficulties overcome and obstacles surmounted. In the case of the textile trades of Germany it must be borne in mind that those difficulties and obstacles were neither few nor insignificant. The interruptions and unrest of civil and frontier wars; the many small industries to be amalgamated, nurtured under dissimilar economic and social conditions and severed by national and religious prepossessions; the prejudices of an agricultural population to work in a factory; and finally, the blows of a full-grown and strongly armed competitor have all left scars which Pan-Germanism has not yet succeeded in healing. When

all this is taken into account, then the German textile industries of to-day must be regarded as no mean industrial achievement, as not unfit to take their place beside those other great developments, which together take up perhaps the most striking chapter in the economic history of the 19th century—the chapter entitled “the rise of Germany.”

CHAPTER II.

THE LOCAL DISTRIBUTION OF COTTON MANUFACTURE IN GERMANY.

It has been shown how the cotton industry gradually came to be represented in almost every part of Germany. The accompanying table will indicate the size of the industry, the proportion in which spinning and weaving are distributed among the various states and the directions which the most recent developments have taken.

A glance at these figures will show how widely scattered are the looms and spindles of Germany compared with those of England, where Lancashire, with the adjacent strips of Yorkshire and Cheshire, harbours an industry more than four times as great. In Germany, however, a division merely according to political frontiers does not do full justice to the actual geographical concentration of cotton manufacture in certain districts. These districts are, roughly speaking, three, each with its own characteristic features and each more or less clearly related to a corresponding field of industrial activity across the German frontier. It will be convenient then in giving a general account of the German cotton industry, to distinguish between the North-Western, the Central and the Southern districts.

The North-Western district comprises Rhenish Prussia and Westphalia, which in their turn demand separate treatment, since both in age and character their industries are strongly contrasted.

Rhenish Prussia again is sharply divided into two industrial areas by the Rhine. On the right bank of the river the industry dates from the 15th century, when the chalky waters of the Wupper caused the inhabitants to

Table, showing the size of the Cotton Industry in Germany, the proportionate distribution of spinning and weaving among the various States, and the line of the most recent developments.

	1887.			1898.			1905.			1909.					
	Spindles.			Spindles.			Spindles.			Looms.	Spindles.	Looms.			
Alsace ...	...	...	1,375,000	...	...	1,597,848	...	...	1,511,586	...	39,919	...	1,638,423	...	41,957
Baden ...	...	...	398,172	...	...	429,786	...	...	468,784	...	16,744	...	528,650	...	17,429
Bavaria ...	...	...	924,312	...	...	1,390,558	...	...	1,578,084	...	32,781	...	1,927,248	...	35,687
Württemberg and Hohenzollern	...	...	362,048	...	...	553,598	...	...	714,905	...	20,133	...	864,924	...	23,610
Saxony ...	...	...	541,122	...	...	1,101,662	...	...	1,321,288	...	39,236	...	1,592,963	...	45,537
Condenser yarn	...	...	460,447	...	...	768,205	...	...	628,025	...	—	...	793,672	...	—
Silesia ...	...	...	75,064	...	...	109,718	...	...	109,320	...	16,540	...	145,563	...	20,325
Rhemish Prussia	...	...	435,802	...	...	861,816	...	...	1,051,362	...	50,137	...	1,351,334	...	56,820
and Westphalia	...	...	285,828	...	...	852,723	...	...	1,172,222	...	—	...	1,591,786	...	—
Rest of Northern Germany ...	...	...	197,000	...	...	214,800	...	...	274,440	...	15,709	...	354,676	...	18,958
	5,054,795	...	7,880,714	...	...	8,830,016	...	...	231,199	...	10,789,239	...	260,323	...	260,323

take up linen-bleaching on an extensive scale. Encouragement was forthcoming from the government, and in 1527 the citizens of Barmen and Elberfeld received the grant of a monopoly of yarn-bleaching in the district. Cotton-yarn was first bleached there in the 17th century, when an important community of merchants had already collected, who bought the yarn and had it bleached on commission. Weaving for other than the personal use of the weaver came in about the same time but had at first to overcome the violent opposition of the "Garnnahrung" or yarn-dealers' organization, which was threatened with ruin by its customers in Holland, if it allowed any competition to Dutch fabrics in the Wupper Valley. The cloths woven were light coloured goods for the Indian market; but wages in the district after a time became too high for this trade and this fact caused many of the looms to be transferred about the end of the 18th century to the left bank of the Rhine.

Thus originated the cotton industry of München-Gladbach and Rheydt, which still flourishes. When soon afterwards Napoleon moved the French frontier to the Rhine, the merchants of Barmen and Elberfeld were cut off from their looms, which however they thought well to follow across the river in order to watch their interests there and to exploit the opportunities which arose for a very profitable trade by smuggling German cloths across the frontier and selling them there as the products of the French branch. However in course of time the right bank devoted itself more and more to fabrics which could better afford to pay the high wages there; such as silk, which became established at Crefeld, and the union linings, which two firms began to weave at Elberfeld in 1830 and which are still the staple article in the neighbourhood.

The rival town of Barmen went its own ways. Barmen articles (*i.e.*, "Passementerie" of all kinds) were introduced there by fugitives from the Netherlands in the

16th century. From Barmen the industry spread to neighbouring villages, such as Ronsdorf, Langenberg, Wermelskirchen, which have each devoted themselves to some special article. Each of these places has a world-wide market in its own speciality. Cotton of course is not the only raw material used, but it is extensively used as warp for more valuable fibres, and is consumed in considerable quantities in the shape of "Eisengarn," a yarn subjected to a special finishing process invented in the Wupper valley. The machinery used in all the various industries is also in the main due to the inventive genius of the valley's inhabitants and is all manufactured in the district.

Finally the twin towns have important subsidiary industries. Elberfeld has its print-works and Barmen its dye-works, which line the Wupper on either side and dye its waters a different colour every hour of the day.

It is now time to return to the looms on the left bank of the river, whose destinies are to the investigator of the cotton industry of far greater importance. At München-Gladbach and Rheydt and in the villages grouped round about—Mülfort, Viersen, Dülken, and others of less importance—cotton has ruled almost unchallenged; for large as has been the variety of cloths of which the district has made a speciality at various periods, it has always in the main remained true to cotton-spinning and cotton-weaving. From the first the industry developed rapidly thanks to the experience of the inhabitants in linen-weaving and the high protection of the French tariff. The Continental System gave an added impetus to spinning, and new spinning as well as weaving concerns succeeded one another in rapid succession, while the English yarns were excluded. The reaction was not long in coming. The left bank of the Rhine was recovered by the Germans and mills which had been founded to cater for the French market were suddenly faced with the task of selling their products in Germany. Many

weakly-founded undertakings went under in the succeeding crisis. Those who survived were compelled to take up new fabrics, and from this period dates the introduction of many of the articles which are the specialities of the district to-day. Curiously enough one of these, the "Biber" or heavy waste cloth, which is still turned out in München-Gladbach, caused a temporary revival of hand-spinning, as it was thought that machine-spun yarn was too regular for the article. This partly accounts for the late introduction of mechanical spinning, which only began definitely to prevail in the fifties, when several large establishments with steam power were founded. It was then that the Gladbacher Spinnerei and Weberei, whose impressive façade and machicolated towers are still a landmark in the district, began its career with 15,000 spindles and 250 looms. With a few short interruptions the industry of the district has flourished since that time. It is to-day, with its 50,000 textile operatives, one of the leading textile areas of the continent. The main fabrics produced are buckskins, both of pure cotton and cotton with an admixture of wool, and raised blankets and flannelettes. Of recent years, too, an important industry has sprung up for making up the fabrics woven into ready-made clothing, largely a home-industry which serves as a subsidiary source of income to a large number of families. The spinning which is done is comparatively coarse. One or two concerns spin yarns as fine as 70's, but the general range of counts is from 6's to 40's.

In marked contrast to the cotton industry of Rhenish Prussia, that of Westphalia is of quite recent origin, its most important developments having taken place after the Franco-German War. The industry in the main is grouped on or close to the rivers Ems and Vechta. The two most important centres are Rheine and Gronau. Rheine on the Ems has a character all its own. The mills are after the designs of an Oldham architect, the spindles all by a single Oldham firm, the looms by a single Burnley

firm. In no other town is the debt which the German spinner and weaver owe to England so clearly exemplified and nowhere is it so readily admitted as in Rheine. Coarse counts are spun and only plain calicoes woven. The mills are all fine modern structures with the newest appliances. The most recent weaving sheds are installed with an electrical individual drive. The villages close to Rheine are mainly engaged on coloured goods and have no spinning.

The principal spinning centre of Westphalia is Gronau with close on a million spindles, of which more than 400,000 belong to one concern. The village itself is out of all proportion to the size of the industry it harbours. It lies close to the Dutch border and the Dutch textile centre Enschede, whence many trainloads of operatives come across the border every morning. Some of the mills are even so close to the frontier that the Dutch operatives can walk to their work there. At least one is within a stone's throw of the frontier, and it is a remarkable sight, when the machinery stops at mid-day or at night, to see many hundreds of men and women troop out of the mill-gates, past the custom-house and into Holland. Dutch capital has also played a large part in financing the mills and many of them are still managed by Dutchmen. At Nordhorn and Bocholt also there are large numbers of Dutch operatives. Nordhorn is situated in the North of Westphalia and is mainly engaged on coloured goods, for which the yarn is dyed in the sliver. Most of the concerns both spin and weave. Since the village is in a flat and unattractive district, which is only thinly populated, wages have to be high to attract the operatives who come many miles on bicycles to work in the mills. Bocholt is further south and is in a sense a connecting link between the industry of Westphalia and that of the München-Gladbach district. Considering the size of its industry it produces an enormous variety of different articles, including the flannelettes and waste

cloths of Gladbach and the various coloured-goods of Westphalia.

As the figures clearly show, the development of the cotton industry in Westphalia has been late but exceedingly rapid. More than one favourable circumstance is responsible for this rapid development. The industry is closer to its cotton and coal ports than any other in Germany. Nordhorn, indeed, can obtain its coal direct from England and bring it in barges along the canals on whose very banks most of the mills are situated. The west wind can carry its moisture intact over the Dutch plain, so that the Westphalian spinner enjoys the nearest approach to Lancashire spinning-weather that is to be found in Germany. In the labour market again there are no important competitors and the industry had from the outset the advantage of operatives and managers of ripe experience drawn from the Dutch textile centres. It is to the coincidence of all these advantages rather than to any single one of them that the success of cotton spinning and weaving in Westphalia has been due; and it needs no prophetic inspiration to foresee that Westphalia will continue to be the scene of a rapidly expanding industry in the immediate future.

The cotton industry of central Germany stretches along the three mountain ranges which separate Bohemia from Germany, and strikes its offshoots into each of these ranges. Politically it embraces Lower Silesia, the whole of Saxony, and the north-eastern corner of Bavaria. Roughly speaking five lesser groups may be said to make up the industry. Beginning in the east, the town of Reichenbach and the unwieldy villages of Langenbielau and Peterswaldau are the scene of an industrial tragedy which has stretched over centuries, and has inspired Hauptmann to write his tragedy "Die Weber." It has, indeed, called into existence a literature all its own, directed either to extracting palliative measures from the government or merely compassion from the public. It is

a barren soil, where weaving is the only resource of inhabitants naturally agricultural and with a love for their homes too strong even for hunger to overcome. Hand-weaving and the acutest misery are now confined to the mountain villages. Where the railway has penetrated, wages are still lower than in any other part of Germany, but they suffice for the necessities of life, and an operative class has arisen which is rapidly awakening to the possibilities of organization. Moreover the introduction of up-to-date methods, the substitution of cotton for linen as raw material and the rise of bleaching and calico-printing on a large scale, have all played their part in raising the standard of life and the intelligence of the population. In the main, coloured goods are woven, principally now on power-looms. A considerable number of hand-looms however survive in the remoter districts, where throughout the winter weaving is the only possible occupation for the cottagers, and even in the summer the click of the shuttle is heard issuing from every cottage after twilight. Plain calico is woven by a single firm at Reichenbach, partly on automatic looms, while Barchent, now of cotton warp with condenser weft, is still produced at Peterswaldau by the firm which plays the villain's part of the employer in "Die Weber." Bleaching, dyeing and calico-printing are carried on by two firms of the first magnitude at Langenbielau, which, while the necessary facilities existed, did an important trade with Austria under "admission temporaire." To-day with the advantage of special railway rates for grey cloth from Southern Germany these firms work largely for Berlin wholesale houses. In cotton-spinning Silesia is only just making a beginning. There is one modern spinning mill in the province. The rest of the concerns are quite insignificant. In the main they are engaged in waste yarns, and many of them with their ill-ventilated rooms and crowded machinery recall the accounts given of cotton-spinning in Lancashire early in the last century.

Moving westward from Silesia we reach Zittau and Neugersdorf in the Lausitz, each engaged on characteristic articles of its own, Zittau on "Jacquards," linings and union dress goods for ladies, Neugersdorf on Oxfords, cotton trouserings and dress goods of pure cotton. Neugersdorf is interesting by reason of its loom manufactory, one of the most successful in Germany. It is also the biggest consuming centre for the "vigogne" yarns of Werdau and Crimmitschau. A variety of cotton goods is also manufactured in the valleys of the Lausitzer Gebirge;—inlets, white and coloured flannelettes, "listados" for the West Indies, and moleskins, among many others. The industry here joins right on to the Austrian cotton industry of Warnsdorf and Reichenberg, and large numbers of Bohemians come daily across the border to work in the German mills. In this district there is hardly any spinning.

The industry of the Lausitz, however, is only an eastern outpost of the main Saxon industry of which Chemnitz is the focus. Of the many towns wrongly called the "Manchester of Germany," Chemnitz has perhaps more claims to the title than any other, for it performs the functions of a commercial metropolis to the many-sided and scattered industry of the neighbourhood. It has also important industries of its own, cotton-spinning, the weaving of upholstery materials, chiefly velvets and moquettes, the manufacture of textile machinery of all kinds, etc. The products, however, with which the name of Chemnitz is associated all the world over, namely, stockings, gloves and underclothing, are largely produced outside the town. These industries work very largely for export, Great Britain and her colonies being the most important customers. The export-trade is to a great extent in the hands of the manufacturers themselves, but where this is the case the manufacturer will usually have a good deal of work done for him on commission by smaller men in the surrounding villages. The existence of these

small concerns is largely due to the enterprise of the machine shops, who have started them in business by supplying them with machinery on the instalment system, retaining a mortgage on the machinery until the whole sum is paid. Nearly all the men who have been started in business in this way have won through. They produce cheaply, because they specialize in one article only and are often assisted by the members of their own families; and they run no risks, because they are provided with their raw material by others.

In contrast to Nottingham the hosiery machines used are very long. Usually they make 18 to 28 stockings at once, and are minded by one operative. At Nottingham one operative will mind two machines of 12 stockings each, the advantage of this method being that when the machine is standing still, as is frequently necessary, so many less stockings are stopped. The circular American machines are also used to a considerable extent. The embroidery is done by the wives of coal miners in Saxony and Bohemia, who, since they have no other occupation, work for very low wages.

Glove-making even more than hosiery-manufacture is carried on outside Chemnitz itself, Burgstadt and Oberfrona being the most important of a large number of villages engaged in the trade. Of the operatives from two-thirds to four-fifths are women, the majority employed in their own homes in sewing seams, buttonholes, etc. The concerns are for the most part small, the largest employing about three hundred hands. A firm of this size, however, will employ up to 600 hands outside the mill. The enormous demand for home-workers makes wages high, and the district is consequently very prosperous.

The underclothing manufactured in Saxony consists mainly of fashioned goods. The circular "Terrot" machines are used more in the Stuttgart district. The

concerns are mainly in the town of Chemnitz and are of large size. There is little work done on commission.

In the underclothing, hosiery, and glove industries, to which reference has been made, cotton is of course not the only raw material used. An account of the German cotton industry would, however, be incomplete without a brief reference to these industries, because they are just the spheres of cotton manufacture in which the Germans have gained not merely a very high degree of efficiency but a predominating position in the world's markets. Moreover during recent years cotton has gained ground with astonishing rapidity and has confined the use of silk and wool within ever narrower limits. Firms which for years had confined themselves strictly to woollen underclothing and had deemed it beneath their dignity to place anything manufactured of cotton on the market, have recently been compelled in self-defence to break with their traditions and take up the manufacture of cotton underclothing as well.

It is time to return from this digression to the cotton industry proper. As has been already mentioned Saxony was the scene of the most striking early developments in spinning. All these took place along the rivers Zschopau and Flöha and on the Willischbach, whose water-powers they exploited. It is on the banks of these three streams that the majority of Saxon mills are situated to-day. Although the water-powers have deteriorated considerably, and have in some cases been abandoned, they have contributed materially to the success of some of the largest concerns in Germany, such as those at Falkenau and Mittweida. The largest mill in Saxony is that at Leipzig with 240,000 spindles spinning Egyptian cotton only. Of recent years the Saxon mills have also begun to take up the fine gassed yarns which are used in the manufacture of stockings and gloves. These were formerly all imported from England, but the Saxon spinners are said to spin

them so successfully now that the English trade is likely to decline considerably in the near future.

Apart from the spinning of ordinary yarns, there is a highly characteristic industry almost confined in Germany—not to say in Europe—to the two towns of Crimmitschau and Werdau. These two places specialize in a particular kind of condenser yarns. Shortly described the process is woollen spinning with low-grade cotton or else cotton waste as the raw material. The cotton is bleached or else dyed either before or just after passing the opener and is then fed into a system either of double or else triple cards, from which the beams are put behind mules with two drawing cylinders and spun. From the fact that there are only two cylinders instead of three as on the ordinary mule, the yarn is known in Germany as “two-cylinder yarn.” Another name for it is “vigogne” yarn. The hair of the Vicuna has probably never been spun at Werdau or Crimmitschau but woollen spinning was carried on in both places, until an ingenious spinner, struck by the crinkly wool-like character of Indian cotton, began to mix this with his wool. Little by little the new fibre ousted the old, until to-day, although mixtures with as much as 75 per cent. wool still occur, the usual percentage of wool is only 2 to 5 per cent. The cotton used is mainly Sind of all grades, but a great deal of waste and some American up to “good middling” is also consumed. The yarns spun show every shade of colour and mixture of colours that the exigencies of fashion may dictate. Almost all the mills do their own dyeing and will undertake any shade that their customers may require. What specialism there is is in black yarns, which are mainly consumed by English hosiery manufacturers. The most important consumers of “vigogne” yarns in Germany are the dress goods manufacturers of Neugersdorf, the weavers of coloured flannelettes of München-Gladbach, where the yarns have also been taken up by a few spinners, and the underclothing manufacturers of

Saxony and Württemberg. On the whole the mills are small. Only one has more than 50,000 spindles, and 20,000 spindles is considered a large concern in the trade.

For the operatives it is not a healthy occupation, since not only is the dust caused by the carding of the dyed cotton even more unhealthy than that of the ordinary card-room, but the ventilation and general arrangements of the mills of Werdau and Crimmitschau usually leave a great deal to be desired.

Cotton-weaving in Saxony is on the whole confined to specialities. The firms engaged on plain calicoes are very few, and, above all, the mixed concerns which are so predominant in the southern area are almost entirely absent.

The many-sidedness of Saxon textiles does not end here. In Chemnitz, Dresden, and on a more extensive scale in the district known as the Voigtland, at Auerbach, Falkenstein, and Plauen, curtain, lace and Nottingham-net making are carried on. Net is usually manufactured in separate concerns, two of the most important of which have been founded by the makers of the machinery and have since been floated by them as highly successful limited companies. It is in other cases carried on in conjunction with lace and curtain manufacture. In a few instances all three are even made by the same concern, an example where the neglect of specialism has distinct advantages, in that whatever the fashion in curtains may be such a concern can never be altogether without work.

Of world-wide repute is the embroidered lace industry of Plauen, a rival of the similar industry of St. Gallen in Switzerland. In this industry three processes have to be carefully distinguished. Firstly, hand embroidery, which is purely domestic; secondly, hand-machine embroidery, which is partly carried on in the home by small men who work one or more machines with the aid of members of their families, partly in large concerns; and thirdly, machine embroidery, where the machine is

driven by steam or more commonly by electric power. Between the two last there is a difference not only in the manner of driving the machine but in the stitch. The hand machine uses the same stitch as a woman sewing. There are two frames passing the needle to and fro through the cloth and these frames, as well as the pentagraph which controls the design, are worked by hand. In the case of the mechanically driven machine the stitch is that of the lock stitch sewing machine and each needle has a corresponding shuttle at the other side of the cloth which is being embroidered. In the majority of these machines, too, the pentagraph is worked by hand; but of recent years a system in which it is worked mechanically by a series of cards (as in the Jacquard looms) has been introduced and found highly successful for some classes of work. This invention is interesting as an instance of an improvement in production, which does not, as is usually the case, enable one operative to attend to a larger number of machines of the same kind as before but disposes of a whole class of highly paid operatives altogether. The Plauen industry works partly on cloth imported under "admission temporaire" and has a large export trade, especially to the United States. The men engaged in the industry earn high wages and the women of the district need never lack clean and remunerative work, which can be done in the home. It is not surprising therefore that the town gives the visitor the impression of great prosperity.

The western extremity of the central area is formed by the important cotton industry of Upper Franconia. Hof, the principal cotton town in the district, with its numerous great mills, its smoke-laden atmosphere and exclusively industrial population, is one of the places in Germany which most nearly resemble a Lancashire cotton town. Medium counts are spun and plain calicoes are woven at Hof itself, but in the surrounding villages coloured goods predominate. Among these the most important are

Helmrechts, best known for its woollen and silk shawls, and Münchberg with its well fitted textile school and two large firms engaged in weaving corset-drills with an export to almost every country in the world. The old-established spinning and weaving concerns of Bamberg and Bayreuth have already been mentioned. The most southerly outposts of the industry are at Forchheim, Erlangen and Fürth on the line to Nürnberg.

It remains to speak of the South German cotton area comprising the industries of Suabia, Würtemberg, Baden and Alsace. We are here dealing with an industry which in addition to its local coherence is in other respects also comparatively uniform. With the exception of the three important centres Augsburg, Stuttgart, and Mulhouse, the mills are very widely scattered and there are usually not more than one or two in the same village. The whole industry is at a considerable distance from its coal-fields and cotton ports and also from the main centres of consumption, the towns of Rhenish Prussia and Berlin. Most of the mills were founded on their present sites about the middle of the last century in order to exploit the water-power which is available through the whole of the area, and many of them owe their continued existence only to the fact that their buildings and machinery have long since been written off.

Both these advantages are in evidence at Augsburg, historic ground for the student of cotton. Not only was it at Augsburg that some of the earliest attempts were made to employ cotton on a commercial scale but throughout the last century the town played an important part in the organization of the employers of the industry and it is to-day the seat of some of the largest concerns in Germany. It is moreover the only large town in Germany where the water-powers used are of considerable importance. As much as 3,000 H.P. is exploited by one mill. The water, however, is not to be relied on all the year round. In dry seasons it may be reduced almost to

nothing and in times of flood, as was the case in 1910, it may be put completely out of gear. The result is that for all the water-power used there must be a steam-engine in reserve, which naturally increases the cost of power considerably. This is true of almost the whole of the water-driven mills of southern Germany. The only exceptions are the few cases where it is possible to use storage reservoirs. In a few other cases electrical accumulators have been tried and the turbines have been kept working at night, but this plan has not been found to pay. Of course when it is necessary to work the steam-engine the high price of coal makes it extremely expensive.

Throughout the whole of southern Germany the characteristic concern is one spinning low and medium counts and weaving plain cloths for printing and bleaching. The largest concern of Augsburg is of this kind, and in spite of its 127,000 spindles and 3,000 looms is still in course of enlargement. Other concerns confine themselves to the one branch of the industry. All have excellent communications thanks to the "Industriebahn" or industrial railway which connects all the mills with one another and with the main railway system. In addition to the spinning and weaving concerns there are at Augsburg a number of printworks, dyeworks, and bleach works. Usually these three processes as well as finishing are done by the same firm. South of Augsburg there are a number of isolated mills in the Algau, all with large water-powers without which it would be impossible for them to exist.

In Würtemberg the metropolis of the cotton industry is the capital, Stuttgart, which is also in a sense the centre of the whole of the South German cotton industry apart from Alsace. There is an exchange held there twice a month and quotations for yarns and cloth are then published. There are also at Stuttgart important yarn and cloth agents much as they exist in Manchester. These men are engaged in selling the production of the spindles and looms of Würtemberg, Baden and Bavaria, not only

in these districts but in other parts of Germany as well, where they in their turn are represented by agents. In addition, Stuttgart is the centre of the underclothing manufacture of Württemberg. There are some large concerns engaged in the trade in the town itself and the immediate neighbourhood, but the bulk of the purely manufacturing concerns are in southern Württemberg, at Ebingen, Balingen, and Hechingen, where a cheaper class of goods is produced. In these places the concerns are in general very small and most of them work on commission for wholesalers or even exporters. Both Stuttgart and the smaller places are visited at regular intervals by buyers from England and the United States, while there is also an important export to British colonies through London houses and to South America, mainly through Hamburg and Paris.

The spindles and looms of Württemberg line the river Neckar and its tributaries and are dependent largely on the water of these streams for their power. The size of the mills is limited by the supply of water and most of them are only of moderate dimensions. Practically all of them combine both spinning and weaving, and offer the only means of earning a livelihood in their particular village. As is usually the case in such isolated mills in Germany, the relations between employers and employed are patriarchal in character. The employer looks well after his workpeople, builds cottages for them, provides them with food at wholesale prices, grants them a holiday to gather their grapes or harvest their grain, helps them in case of sickness, maintains a village school for their children and usually knows most of them by name. In return he has cheap labour and also labour too docile to organize. More will be said of this "welfare work" in a later chapter.

In the Württemberg cotton industry a somewhat special position is held by Göppingen. The whole town is engaged in weaving inlets and the majority of the con-

cerns dye their own yarns. The uniformity of the product has also led to the introduction of a wages list, which does not exist in any other cotton-weaving centre in the country, while the Göppingen industry has also shown itself more advanced than its neighbours in adopting the ten hours day almost twenty years before it was legally enforced.

What the Neckar is to Württemberg the Wiese is to Baden. With the exception of a few isolated mills in the north and south the whole of the cotton industry of the Grand Duchy is on this little mountain stream, dotted along its banks from the point where it leaves the slopes of the Feldberg almost down to Bale. The mills are mostly old foundations and spin coarse and medium counts and weave plains and Jacquards, which at least one of them also dyes. Here, as in Württemberg, the pioneers of the industry came from Switzerland and even now three-fifths of the families owning the mills are Swiss. Owing to the fact that a large number of Italians are employed in silk-weaving, which is important lower down the valley, and that others are employed as road-makers and plate-layers, there is a surplus of Italian girls eligible for work in the mills. Most of these, however, only remain during the summer months, and efforts to segregate them in boarding-houses during the winter have sometimes ended suddenly with the flight of the boarders over-night.

If the majority of the Wiesenthal manufacturers are not of German descent, those of Alsace are far less so. Most of the families controlling the mills of Mulhouse Colmar and the valley of the Vosges to-day were the founders of the industry there a century or more ago. Still French rather than German in their sympathies, they are above all Alsatians, imbued with a strong local patriotism and with a great and not unjustified pride in the achievements of their province both in the industrial and in the social field. Their activities in both these

spheres are focussed in the "Société industrielle de Mulhouse," founded in 1832, and active ever since in raising not only the efficiency of the industry and the workpeople engaged in it, but in furthering the intellectual and social life of the district.

The industry of Mulhouse itself is now largely in the hands of limited-liability companies, most of which were founded at the conclusion of the Franco-Prussian War, when a large number of the mill-owners retired to Paris and found it convenient to turn their interest into shares. Some of the mills are controlled by large distributing firms with a predominant share in several concerns, the products of which they sell either in the raw state or else after having them dyed or bleached on commission as the case may be. On the whole the counts spun in Mulhouse are higher than in any other German textile centre; in the town itself, however, there is little real fine-spinning. The looms are mainly engaged on printers and every variety of fabric for dyeing and bleaching. There is very little weaving of coloured goods.

In the Vosges there is a little fine-spinning, and one firm at Gebweiler still perseveres with counts as high as 200s. This firm has spun these fine counts for the last fifty years and in order that the operatives may not lose the skill they have by now acquired, it continues with them, in the hope that at some not too distant date the authorities at Berlin will be persuaded to afford more adequate protection to the fine-spinner. Most of these fine counts are consumed in the mill itself. The valley of Rothau in the North of Alsace is interesting because it confines itself to a single speciality "croisé" or drill. In fact, it is known as "la vallée du croisé." The whole population here still speaks almost pure French.

Calico-printing, the industry in which the Alsatians have achieved their greatest triumphs, is carried on in Mulhouse and in the valley of Wesserling, where the finest articles are produced. In his own specialities, such

as voiles, satins, etc., the Alsatian printer has few rivals. Nevertheless his position has of recent years become increasingly difficult, as fashion has been against him. Moreover several concerns have suffered heavy losses through the movement of cotton prices against them, a fact which has lately induced several to confine themselves to job-printing. A few firms continue to pay large dividends, but this is only possible in the case of old-established concerns, whose plant has long been written off, so that there are no charges for depreciation.

It remains to say a word of the mills scattered up and down the country which do not belong to any one of the three areas which have been described. Thus there are two large mills at Hanover, one of them a spinning-mill, the other a concern which weaves, cuts, and finishes cords and velvets. At Osnabrück there is a concern engaged in producing a large variety of coloured goods from the raw material to the finished article; at Speyer and Cologne there are spinning mills; and other mills too numerous to mention are scattered over Northern Prussia, most of them of little importance.

In the preceding pages it has been attempted to describe the local distribution of cotton-manufacture in Germany and to pick out the salient features in the various districts. The fact emerges that the industry is made up of a large number of small industries which have originated at different times and under widely different circumstances. Many of them, founded at a time when the play of economic forces was hemmed in by political divisions which have since ceased to exist, find themselves situated now so unfavourably that they must needs struggle hard to survive. Others have been able to choose the most favourable ground with full knowledge of the conditions under which they would have to work. These conditions have not yet prevailed long enough for each district to discover and confine itself to the work for which it is best adapted. There is much unprofitable competition and

this is not confined to the German home trade. Foreign competition is of course infinitely stronger still, and against this it is not only the unfavourably placed German spinner and weaver who is at a disadvantage; the most favourably placed is also strongly handicapped. In what that handicap mainly consists and of what importance it is, will be discussed in the next chapter.

CHAPTER III.

THE WORKING CONDITIONS OF THE INDUSTRY.

THE lament of the German cotton spinner and weaver over his unfavourable working conditions may be found most emphatically stated in the shorthand report of the official *Enquête* of 1878. There were no two opinions expressed before the commission. One witness after another recited his tale of woe and told of the cheaper coal, cheaper machinery, cheaper repairs, cheaper money, more favourable conditions for obtaining the raw material, more efficient labour, more favourable climate, and other advantages enjoyed by his English competitors. Since then of course the German cotton industry has made great strides. Managers and operatives have become more efficient. The equipment of the mills has improved enormously. The raw cotton market at Bremen has been established and the German chemical and electrical industries have reached that pre-eminent position which allows them to render important aid to every other industry carried on in Germany. Indeed, the rate of progress has been far more rapid in Germany than was possible for the English industry, which had by the 'seventies already arrived at a very high state of development.

If much has changed, however, in the conditions under which cotton manufacture is carried on in Germany since 1878, one thing has changed but little and that is the localization of the industry. It is true that the most striking developments in Westphalia have taken place since 1878, but with this exception the districts, in fact the villages, in which the cotton mills are situated, are the same now as then. It already has been emphasised that

a considerable number of the mills are very unfavourably placed for obtaining both their fuel and their raw material. In fact there is no district in Germany which combines the advantages that Lancashire offers to cotton manufacture in these respects. There are no coal-fields so close to any German port as those of Lancashire are to Liverpool. Still less is there any district the climate of which is at all comparable with that of Lancashire for facilitating spinning and weaving. In search of spinning weather the German has to be content with the moisture which collects in mountain valleys or else has to put up with heavy charges for humidification, which at its best is neither a complete nor always a reliable substitute.

The main coal fields of Germany are those of the Saar, the Ruhr, and Upper Silesia. Apart from these there is a small field in Saxony at Zwickau. Some mills in Saxony and Silesia also make use of the lignite found there by mixing it with ordinary coal. English and Belgian coal is consumed by some few mills near the main waterways. The only cotton mills which really have their fuel at the door are those of Zwickau. The price of the coal mainly used is 100 to 130 Marks per 10 ton truck at the pit-mouth, the better qualities being naturally consumed at the greatest distance from the source. Freight may be anything up to 100 Marks per truck, so that this item of expenditure may be just as large as the fuel itself.

The mills at the greatest distance from any colliery are those of Bavaria and Württemberg, and, if they had not very extensive water-power, these would certainly not be able to subsist. The most common type of turbine in use to day is the Francis turbine, but many of the older Jonval turbines have not yet been replaced. Many of these water-driven mills moreover have received a new lease of life, owing to the possibility of tapping sources of water power at a considerable distance from the mill by turning the power into electricity at its source and conveying it to the mill by a cable. Large concerns

to-day sometimes have three or four power-stations of this kind at distances of several miles, while in the past any water power which was too far distant to be transferred by a rope drive was out of reach. On the other hand the available water-power could be more fully exploited in the past. In those days the mills usually had no steam engine at all and were compelled to suspend operations, at seasons when the water became too low. They were however able to work at night whenever there was sufficient water, which is now rendered practically impossible by legal restrictions on the working-hours of women. Some few mills are in the favourable position that their water-power is transferred at night to some other concern, where night-work is habitual, such as a paper-mill. The water rights have usually been acquired outright by the owners of the mill and no dues are paid, except at Augsburg, where the municipality charges 10/- per h.p. per annum, in return for which it undertakes to maintain the banks of the rivers and canals.

Owing to the great variety in the periods for which the water-power is available and in the works which are necessary for regulating it, it is exceedingly difficult to give a true idea as to the cost. Generally speaking the cost varies between 20/- and 30/- per h.p. per annum, but in cases where the works are of old date and need few repairs it may be practically nil.

Owing to the great distance at which most of the mills are from the coal-fields steam power is naturally far more expensive than in England, and the cost is more often over than under 100 Marks per h.p. per annum, where only steam power is employed. Where both steam- and water-power are in use it is impossible to make any general statement as to the cost of the mill's power. It will vary enormously from one year to another.

As the German cotton manufacturer is placed unfavourably with regard to his fuel by being distant from the coal fields, so he is placed unfavourably with regard to

his raw material by being distant from his cotton port and cotton market. In the first place he may have to pay high freight on the cotton. However, there are specially low rates for cotton on the railways, and the rate per kilometre diminishes as the distance increases. Nevertheless there are mills in the south paying consistently 2 per cent. more for their raw material than their competitors in the north on account of the higher freight. The distance of the mills from Bremen, however, has a more important effect than this. It renders it impossible for the spinner to choose his own cotton and compels him to buy by grade alone. Moreover he cannot keep in touch with the market in the same way as the English spinner, who visits his broker in Liverpool at frequent intervals.

The small size of the Bremen market also has serious drawbacks. The stocks kept there even of American cotton are very limited, so that it is advisable for the spinner to lay in a large stock for himself or at any rate to cover himself for a considerable period at a time. Of Indian and Egyptian cotton there is no stock at all. This want is especially felt with regard to Indian cotton, which is consumed in considerable quantities. It is bought mainly through importers at Liverpool, Manchester, Antwerp and Zurich, to some extent also direct from the Indian exporter. The Egyptian cotton is all bought from exporters in Alexandria. Apart from other reasons it is therefore desirable for the spinner to buy in quantity owing to the long time which must elapse between the purchase and the arrival of the cotton at the mill, a period which is liable to vary considerably. What disastrous results the laying in of these large stocks may have, the shareholder in German cotton-mills has frequently learnt to his cost.

Bremen of course is not the only cotton port of importance. For the Saxon mills especially, Hamburg is used for American as well as Indian and Egyptian cotton, the bales being transferred to barges and brought along the

Elbe as far as Riesa. Otherwise Egyptian cotton is mainly brought to Rotterdam and Indian cotton to Antwerp. For South German mills Marseilles, Genoa and Trieste are all used. Trieste especially has lately gained in importance owing to the construction of the Tauernbahn, which has shortened the distance from Trieste to Bavaria appreciably.

The organization and conditions of the Bremen cotton exchange will be discussed later. Suffice it to say here that the actual transaction of buying is extremely simple and convenient for the spinner. In this respect the Bremen market has a distinct advantage over all other means of buying in the eyes of the German spinner and makes the position of the American exporter as well as of the Liverpool broker very difficult.

In regard to his plant the situation of the German manufacturer is in most branches of the industry even more unfavourable. This is not due to any lack of enterprise. In the Alsace the manufacture of textile machinery has a century-old tradition both at Mulhouse and Gebweiler, and in Joshua Heilmann, the inventor of the Heilmann comb, it has had at least one inventor of the very first rank. In the manufacture of machinery for certain special branches of the industry such as stocking and glove making and lace manufacture, as well as in individual processes, such as raising, bleaching, mercerising, and many classes of finishing, Germany competes and competes successfully with our own makers. In heavy cloth looms too Chemnitz and other places in Saxony have struck out a line of their own. It is in the production of the staple machinery for cotton spinning and weaving on a large scale that England is still almost unchallenged by German competition. A monopoly of this kind is exceedingly difficult to break, even behind a protective tariff, nor is this difficulty only due to the economies of production enjoyed by makers who have won for themselves a world-wide market. A spinner or weaver who has

trained several generations of operatives on the same mule or loom is not likely to replace it by another make which will have to be learnt afresh, unless he can buy it very much cheaper. The only resource of the German makers has therefore been to try to imitate closely the English makes most in use. In one particular he is handicapped at the outset, namely, in finding raw material equal to that of the English makes. It is the lack of this, that compels the German makers to choose between two alternatives, both detrimental to his chances in the contest, between putting on the market an equally light but less durable and more fragile machine or else a heavier machine equally durable, but needing far more power to drive it. The result is that a 10 per cent. duty and the freight from England are by no means adequate protection for the German product.

Most of the English machinery that is imported is mounted by English fitters. However, even when the duty and freight have been paid and the machinery has been started in perfect working order, there are still difficulties to overcome. The mill is very probably in an isolated position in a rural district, where there are no machinists at hand. There is no alternative for the German manufacturer in such cases but to keep a machine shop of his own, with a large plant, a great part of which may be idle for weeks at a time, and a staff which is often considerable. When, however, repairs are too large to be undertaken on the premises a new part has to be procured from England and the machine is idle until it arrives. In this respect German and also Swiss makers have an advantage over their English competitors, in that they can replace breakages so much more rapidly. Of the Swiss this is of course true particularly in Southern Germany.

There are in Switzerland two firms of great repute doing a considerable trade in Germany, one in spinning machinery, the other in the equipment of weaving sheds.

The Swiss makes are almost confined to Southern Germany where they have the advantage of low freights and also in many cases of a connection among the proprietors of the mills, many of whom are of Swiss descent. Steam-engines, turbines, electrical fittings, ventilating and humidifying plant, are all imported from Switzerland on a not inconsiderable scale.

Everything included the cost of a new spinning mill in Germany works out at from 40 to 70 * Marks per spindle according to the count and situation, for weaving sheds for plain looms the cost is from 800 to 1200 * Marks per loom. Some of the more luxurious mills, however, with electric driving, decorative buildings, etc., have cost a good deal more.

Having spoken of the conditions under which the German mill-owner acquires his plant, his raw material, and his fuel, it is time to enter the mills themselves and to see the machinery at work and the operatives minding it.

A general characteristic of all German manufacturers, mentioned frequently in the evidence before the Commission of 1878, and in every work dealing with conditions of production in Germany, is the tendency to excessive expenditure on mill-buildings. Capital is thus unnecessarily locked up, high interest charges have to be met and the permanency of the structure is an obstacle to the adoption of improvements in machinery. There are mills in Southern Germany, erected in the 'thirties, in which new machinery is being put up to-day and examples abound of structures with unduly narrow and low rooms, which admit neither of a convenient arrangement of the machines nor of the introduction of modern hygienic devices. These mills are from five to seven floors high, usually with another floor for winding under the sloping

* In comparing these figures with the much lower cost in England it must be borne in mind that the exigencies of the German climate make stronger structures necessary than those which are adequate in Lancashire.

roof, and are many times as long as they are wide. The short mules of 400 spindles for which they were originally built have now usually been scrapped, many of them on the profits of the last boom, and are now replaced by ring-frames, for which the width of the buildings is not unsuited.

Of late years the English method of lighter construction has been adopted to a growing extent, and the most recently constructed brick mills have little to distinguish them from those of Oldham or Bolton, although the German manufacturer still takes rather more pride in the external appearance of his mill, which is of course more frequently the possession of an individual or a family than is the case in Lancashire. Some of the finest mills in Germany are, however, built of reinforced concrete, which has the advantages of very rapid construction and a high degree of safety against fire, while it also allows of a very large window area.

A good deal of spinning is done in Germany in sheds. Some of these exist in the large towns as a survival from the time when land was cheaper than it is now. Others are in the country and of more recent date. The majority of the sheds are built to hold from 20,000 to 40,000 spindles. Of course the larger the mill is, the greater is the economy in land of a building of several floors. In a shed the transition of the material from one process to another is very much simplified and overlooking is also facilitated. The great difficulty is to maintain the temperature during severe weather in winter, for which the German spinner must of course be prepared.

As regards the manufacturing part of the industry, by far the greater part of the German cotton looms are housed in sheds with a saw-tooth roof, as are the looms of Lancashire, and as in Lancashire these sheds are of all sizes. In many places, however, buildings with several floors are in use, especially in rural districts where coloured goods are woven. Most of these mills are

survivals from an earlier period, but even now buildings of two floors are being built to accommodate looms. There are, for instance, one or two mills of this kind at Mulhouse, constructed of reinforced concrete and filled with automatic looms. In these modern mills the looms on the floor above and those below are driven from one shaft, the belting for the looms on the upper storey passing through the floor. This method of driving looms from below is also in use in some sheds which are situated on sloping ground, so that the expenses of construction are not appreciably enhanced, while the light in the shed is improved.

Coming now to the machinery of the mill the steam engines in use for driving spinning and weaving mills are mainly of German construction; some few, however, are imported from Switzerland or made by Swiss firms at German branches. The English engines that are still working are all survivals from a time long past. The engines used are with very few exceptions horizontal in pattern, two-cylinder compound or triple or quadruple expansion engines according to the power required. A few mills use gas engines and produce their own gas on the premises. A far more promising development is the introduction of the steam turbine, which is found in most of the more recent mills and has superseded expansion engines in a large number of old ones. The turbine is usually coupled direct to a dynamo, a method of driving which is being increasingly adopted both in spinning and weaving mills, especially where economy in fuel is most important.

This may be a convenient place to say something about electric driving, which has made far greater strides in Germany than with us. The cause of this is partly the higher cost of fuel and the proportionately greater importance of power-economies, but no doubt the high degree of development of the continental electrical industries is to a great degree responsible. In England the

controversy still rages whether electrical driving has any advantages over the old system or not. In Germany discussion centres rather round the question whether it is the group drive or the individual drive which is to be preferred. In the spinning mills the group drive still predominates. Each shaft in the room has its motor, either in the room itself or in a separate chamber just outside. The individual drive is used in a few mills for driving scutchers and very extensively for ring-frames with variable speeds. The question of driving mules by an individual electrical drive is engaging the attention of electrical engineers but has not yet entered into the field of practice. In weaving sheds both the group drive and the individual drive are found, sometimes even side by side. One firm where careful experiments have been made of the two systems working simultaneously under identical conditions has found the group drive preferable. In the case of the individual drive the motor is either built into the loom driving direct, or else it is placed on the floor of the shed beside the loom and drives by means of a short belt. The initial cost of course is much higher than for the group drive, but apart from the advantages of economies in power and smoother weaving which are claimed for the individual drive, it certainly gives the weaver far better light and makes the whole shed far easier to supervise, this last an important advantage in Germany, since in many sheds supervision is necessary in order to keep the operatives to their work. Where the looms in a shed are driven electrically the rest of the machinery is naturally driven electrically also.

Of the spinning machinery itself by far the greater part is of English manufacture and is identical with that found in an English mill. In some mills the bale breaker is dispensed with altogether and the work is done by hand. Bale breakers and openers are always of English manufacture, in fact they do not seem to have been taken up at all by the German makers of textile machinery.

Scutchers and carding engines are occasionally of Alsatian or Swiss make. In fact carding engines are now being turned out at Mulhouse, which in the opinion of most German spinners are quite equal to any produced in England. They differ from the usual English pattern in that the main drum and the flats move in directions contrary to one another, instead of moving in the same direction. The same firm at Mulhouse produces a comb, which is being extensively adopted. Each machine has only one delivery and holds two laps. The makers claim that its production is equal to that of five to six deliveries of the combs of other makes. As regards the whole of the rest of the machinery (with the possible exception of the ring-frame) it is generally admitted that the English makes are far superior to any others. The German machines in general produce less and require more power. In the case of the ring-frame it is Swiss competition that is most dangerous. In the south the Swiss ring-frames are very extensively employed, especially for spinning the finer counts of weft up to 80s, yarns which are scarcely spun in England at all.

It is only in the spinning mills of Werdau and Crimmitschau that the picture is reversed. Here all the machinery with the sole exception of bale breakers and openers is of German make and has been built either in Chemnitz or Werdau itself.

In the weaving-sheds the predominance of English machinery is no less marked than in the spinning mills. A few winders of American make are used, also some made in Saxony. A most interesting machine is used in some southern mills which is the invention of an Augsburg manager. It is a creel by which the yarn may be directly wound from the ring-bobbins on to the beam, without intervening winding. The place of the ordinary bobbin on the creel is taken by three ring-frame bobbins, which have to be so started in spinning that it is possible to connect the yarn of one bobbin with that of

another so that the bobbins can be emptied and replaced by others, while the machine is working. Each creel is minded by four girls and one girl minds the beam. One mill has no less than five of these creels beaming 30,000 to 40,000 yards per day of ten hours. The machine is best adapted for very high class yarns, as otherwise, if the winding is dispensed with, there is likely to be a large number of broken threads when the cloth comes to be woven. The sizing machines used are generally the well-known Lancashire makes, but the air-dryers of a Silesian firm are also very popular. Barber knotters and Barber-Colman twisting machines are both very extensively used.

As regards the looms these are either the best known English makes or else a German version of the best known English makes. Coloured looms are often of German or Swiss manufacture. There are several patterns of automatic looms in use, and in districts where weavers are difficult to obtain these looms are used to a large extent. Apart from the Northrop loom, both the automatic loom of a Swiss firm with a pneumatic threading device and a box to hold 140 to 160 weft cops (medium counts) and an automatic loom made at Mulhouse have their devotees. In some sheds all three makes are being tried simultaneously.

On the whole the equipment of German mills is quite up-to-date. Really old-fashioned machinery is scarcely found at all, and the new mills which are now being constructed are not a whit behind those being built in Lancashire. In many respects, indeed, they are superior to them. Especially where the health and comfort of the operatives are at stake the German mill-owner does not shrink from spending money. Passages between the machines are generally wide. Dressing rooms are plentiful, in some cases the operatives are even provided with coats to wear at their work. Baths, often luxuriously furnished, are by no means rare, and some mill-owners issue tickets for one or more baths per week and even

insist on their being used. In other cases a nominal charge is made. In many mills a dining-room is at the disposal of the operatives, with facilities for warming the food they bring with them or else meals are provided at a small charge. Those mills again where many of the workpeople come from a distance have a canteen, where food and drink can be obtained at certain hours. As regards appliances on the machines themselves and in the working rooms, there are signs of the same tendency. Devices for keeping down the dust in card-rooms are rapidly becoming general. They will no doubt soon be made compulsory by law, just as they are being insisted on more and more by the factory inspectors in Lancashire. Ventilation is usually exceedingly good, being in most cases combined with an efficient apparatus for humidification, without which spinning is in the greater part of the country impossible. The systems of humidification are many of them the same that are in use in Lancashire mills, but one of Swiss origin, which is being installed in all the recent ferro-concrete mills, is worthy of special mention. In this system the air is pumped through a concrete chamber in the basement, in which a large number of sprays of water are playing, and is then drawn by fans through channels built into the walls and between the floors of the mill and discharged into the rooms. In winter the air is heated by being carried over hot-water pipes before being humidified.

Of the attention given by the employers of labour to the welfare of their workpeople outside the mill something will be said in a later chapter.

Coming now to the work that is done, the first thing that strikes the observer is its great variety. Almost all German spinning mills spin a large range of counts, as well as several distinct classes of yarn, the great majority having both ring-frames and mules. What specialism there is in this respect must be sought in those mills which both spin and weave, some few of which confine

themselves to a few cloths requiring one count of warp and one of weft. A mill of this kind will require only two mixings, many mills have a much larger number. Attempts have been made at various times by new concerns to spin one or two counts only, such as 20s warp and weft or 36s twist and 42s weft, but in every case they have been compelled to take up other counts one by one. On the one hand the German market for yarn is too scattered to produce a steady demand in a particular district, on the other hand German weavers, who themselves generally produce a large range of cloths, prefer to buy their yarns from a single source instead of being compelled to collect them from a number of mills. This great variety in the yarns spun necessitates firstly an extra reserve of flyer-frames and secondly constant alterations in the mules and ring-frames, entailing a considerable loss of time and the employment of a number of extra hands. Meanwhile the operatives fail to acquire that degree of efficiency which habitual spinning of the same count brings with it and the production of the machines is considerably curtailed.

The most usual range of counts spun by a German spinning mill is from 6s to 50s both twist and weft. Higher counts than 50s are considered fine and are spun comparatively little, since in normal years English competition begins to make itself felt from 40s onward, more particularly in doubled yarns. When there is a slump in Lancashire, counts as low as 20s are sometimes imported. The higher counts spun are very largely ring wefts, which are more popular than mule wefts among the manufacturers owing to the higher production attainable and are not easily obtained from England. This preference, combined with the state of the labour market, accounts for the growing importance of the ring-frame in Germany. In Rhenish Prussia the ring-spindles outnumber the mule-spindles in the ratio of 2 to 1, in Westphalia as 5 to 4. It is only in Saxony, where there is a large demand

for soft-spun hosiery yarns, that the mules are still in an overwhelming majority.

The variety of yarns spun in many cases does not stop at the various counts and qualities of mule and ring yarns. Ordinary spinning mills very often spin their own waste. Others have a few machines running on cotton bleached after passing the opener or else have some of their rovings dyed outside the mill and complete the spinning process themselves. By spinning two rovings dyed in different colours a result is attained with a very close resemblance to a yarn consisting of two colours doubled together.

The same lack of specialism which has been shown to exist in the spinning mills, is manifest in the manufacturing part of the industry. The variety of cloths produced, especially in coloured-goods sheds, is usually enormous, the greatest variety of different looms being found side by side in the same shed. Thus while the number of concerns weaving Jacquards is very large, there are only two or three concerns with nothing but Jacquard looms. What specialism there is, is in grey cloth concerns, but even the majority of these weave a greater variety of widths and qualities than English mills of a similar character. In this connection the market for which the German manufacturer is catering must always be borne in mind. His best customer is the home trade. His foreign trade is with the smaller markets of the Near East or else it is a trade in specialities for which the demand is nowhere great. The highest degree of specialization in Lancashire is found in the mills producing for the markets which swallow goods in bulk, such as China and India. Least specialization exists among the firms supplying the home trade houses or else engaged in the home-trade themselves. It is with these two classes of mills that the German manufacturing concerns should be compared.

It remains to speak of the *personnel* of the mills. As far as the management is concerned this is affected by

the fact that the functions of manufacture and distribution are combined to a far greater extent than is the case in England. A German mill therefore needs a commercially trained, as well as a technically expert manager. As a rule the manufacturing and selling are performed by different persons, just as an English mill will have an outside and an inside manager. Both these functions, however, are more complicated in Germany. The commercial manager has a far greater variety of articles as well as a far more various and scattered *clientèle* to deal with. In addition he may have charge of a direct export trade to the Near Eastern markets or to Holland. The lack of uniformity in the product similarly makes greater demands on the inside manager, or "technical director" as he is usually called in Germany, in distinction from the "commercial director."

Many of the managers of German textile concerns of all kinds have had at least a part of their training in England, either by attending classes at the Manchester School of Technology or else by working for a spell in one of the Lancashire engineering works. However, Germany itself has long enjoyed a reputation for the excellence of its technical schools. There are quite a number of such technical schools which confine themselves to textiles in general and others which confine themselves to a special branch. So the school at Crefeld specializes in silk, that at Aix-la-Chapelle in wool, that at München-Gladbach in cotton. Other such schools exist in the other textile centres, at Langenbielau in Silesia, at Münchberg in Bavaria, and so on.

Unfortunately the degree in which the benefits of these establishments are shared by the operative class leaves much to be desired. Most of them it is true have evening classes but these are not well attended, which is no doubt partly accounted for by the luke-warm attitude of the trade-unions, who in this respect fall far behind the far-sighted view of the English organizations. The result is

that the vertical mobility of the cotton operatives is less than in England.

On the other hand their horizontal mobility is undoubtedly far greater, and herein lies another weakness of the German position. In England the cotton operatives form a class by themselves with a highly-developed class feeling, handed from parent to child. This feeling is fostered by the concentration of so large a number engaged in one trade in so small an area. If a cotton operative loses his place in Lancashire he has not far to go to find another cotton-mill, where he may find employment. The German operative under similar circumstances may have to make a long railway journey; he therefore usually prefers to take up another trade at home to seeking his old employment elsewhere. Not that there are not many who travel. There are enough who have worked at one time or another in every state in the Empire and in Austria as well. But generally speaking the German operative tends to stick to his home rather than to his trade. Moreover, since the factory worker tends to be less expert, the wages he can command in the factory are usually not very much higher than those he can command in ordinary manual labour out-of-doors; and since, in the country districts at least, the majority of the operatives are drawn from the agricultural population, there is always a good deal of changing over from the factory to the fields and vice versa. Farmers even send each of their sons to the mill for a time, so that they may have a source of earning in reserve and that some may earn money at the loom in the winter time, when there is not enough work to go round on the farm. Similarly in the towns there is a great deal of changing over from one class of textiles to another. Nothing is thought of going from a woollen mill to a cotton mill. All this has its effect on the stability of the operatives in the individual mill as well and so we find that in a large mill in Rhenish Prussia, where the statistics have been carefully worked out, as many as 54

per cent. of the operatives employed on December 31st had entered their employment there within the last year.*

The result is that the operatives are without that corporate consciousness of themselves as a class bound to a single industry, the interests of which are their interests, which renders them not only, as is often supposed, a more powerful fighting force to gain their own ends against their employer's, but more efficient craftsmen as well. It needs a factory tradition to breed that intense concentration of the mind and that expertness of the fingers, which can alone extract the maximum efficiency from the machine. There are only very few towns in Germany which can boast a factory tradition, and it is at once obvious to the most casual observer that the general run of the cotton operatives in German mills are less intent on their work and less efficient in performing it, than those of the average Lancashire mill. More operatives are therefore necessary to obtain the same production from the machinery. Even then, however, the machine works under a disadvantage owing to the inferior efficiency of those minding it. Slight irregularities in its working are liable to be overlooked and operatives as well as management are content with something less than the best it can do.

To demonstrate the comparative efficiency of German and English operatives by figures is of course a task of extreme difficulty. The data, could they be obtained in each country, would still deal with conditions so different that deductions from them could never be reliable. However, by giving the number of operatives employed in a few characteristic concerns in Germany it can be demonstrated how great a divergence exists between different mills in different parts of the country and also that the number of operatives everywhere is

* *Die Geschichte einer Baumwollspinnerei*, Marie Bernays. München, 1910, p. 30.

much greater than that employed to do the same work in an English mill.

	A Silesian mill 13,000 ring sp. Av. count 34s	Modern Alsatian mill 23,000 ring sp. 30,000 mule sp. Av. count ca 32s	Westphalian mill 57,000 ring sp. 10,000 mule sp. Av. count 30s	Wurtemberg mill 41,000 ring sp. Av. count 34s
Mixing & blowing room	3	19	9	13
Cards	7	20	18	16
Drawing frames ...	7	19	12	17
Slubbers	7	19	11	11
Intermediate frames	4	26	23	24
Roving frames	16	23	20	20
Ring frames	46	76	15	126
Doffers, backtenters ...	23	42	14	40
Mules	—	83	90	—
Overlookers	6	8	6	6
Engine and boilers ...	3	4	4	4
Total	122	339	222	277
Per 1000 sp. ...	9.44	6.92	3.31	6.76

In an efficient English mill spinning medium counts on mules there will not be more than 2.5 operatives per 1000 spindles.

In the figures given, winders of all kinds, as well as the men employed in the repairing-shop, have been omitted, in order to make them as good a basis for comparison with English conditions as possible.

The proportion between labour and machinery becomes rather clearer when stated as follows:—

Opener: roughly one man per machine.

Scutchers: two machines per man.

Cards: 9 to 12 engines per man, rather fewer where women are employed for can-breaking.

Drawing frames: 1 girl per frame.

Slubbers: 1 girl per frame.

Intermediate frames: 1 woman per frame, or 1 woman with small girl on two frames.

Roving frames: 1 woman on two frames, often with girl to help.

Ring frames: 1 woman minds 300 to 700 spindles, average 400 to 500. Men mind up to 800 spindles. Small girls or boys for doffing and cleaning in addition are found in most mills.

Mules: Spinner and 3 to 4 piecers on a pair of 900 to 1,100 spindles. With very efficient spinners two piecers are occasionally found on warp-mules. Short mules have fewer piecers in proportion to the length.

There is usually one overlooker for each department of the mill, one for the mixing and blowing rooms, one for cards, one for flyer-frames, one for ring-frames; where there are mules there is usually an overlooker in each spinning room. The operatives themselves have as a rule very little technical knowledge and are not allowed to make even the smallest alteration in their machines themselves. Apart from the overlookers there is usually a manager, with a technical-school training, who is in supreme command.

In weaving factories the proportion between machinery and labour is approximately as follows:—

Winding: 1 girl minds 20 to 25 spindles.

Beaming: 1 girl per machine.

Sizing: one man per machine, sometimes with help.

Weaving: 2-3-4 plain looms per weaver. At some sheds in Westphalia four looms are minded by a weaver throughout, but taken altogether there are in the industry fewer four-loom weavers than two-loom weavers. Six-loom weavers do not exist at all. On Northrop and other automatic looms a weaver minds 12 to 16 looms, usually with help for keeping the magazines filled. On

coloured goods and Jacquards a weaver minds two to three looms, on very wide and heavy cloths one loom. Weavers sometimes mind two different sorts of looms at once, say two narrow Jacquards and one plain loom. Among the weavers men and women are fairly equally divided, but the men usually receive the harder and more remunerative work.

Tacklers and warp gaiters: These two functions are usually not clearly distinguished. They are in most cases merely called "Meister" and "Untermeister." One man usually has 55 to 65 plain looms or 40 to 50 coloured looms.

Overlookers: In most weaving sheds there is one overlooker for the whole of the preparation-department and one for the looms.

The speed at which the machinery is run in Germany is usually at least equal to the English speeds, and with superior material* and a greater number of operatives the German spinner arrives at an output which does not compare unfavourably with that of his English competitor, that is to say, while the machines are running. The frequent alterations necessary when different counts have to be spun, however, reduce the time during which the machinery is at work. On the other hand the quality of the product, especially when the finer counts are reached, is no doubt inferior to the best English yarns.

German looms also are run at high speeds. In at least one shed the narrow plain looms are run at 240 picks and speeds of 200 to 220 picks are not at all unusual.

* It may be taken, that as a general rule "good middling" is used in Germany to arrive at results which are attained with "middling American" in England.

CHAPTER IV.

COMMERCIAL ORGANISATION.

AN industry needs the helping hand of commerce, roughly speaking, at three stages; firstly, to procure the raw material for manufacture; secondly, to act as intermediary between one branch and another, where the one branch is supplying the raw material for the other; lastly, to bring the final product to the consumer. Each of these commercial functions is more or less distinct from the others and the demand for each makes itself felt at a different period in the development of the industry. The order in which they have been stated is the order in which we meet them in following the raw material through its various stages, till it reaches the consumer. It is in this order, too, that it will be convenient to give an account here of the commercial facilities at the disposal of the German cotton industry. It is not the historical order in which the facilities have grown. A highly developed commercial organization may exist where there is little or no industry for the purpose of bringing goods manufactured abroad to the consumer. Commerce as intermediary between one branch of an industry and another, whether those branches be in different countries or the same, will develop *pari passu* with the more advanced branch of the industry in question. Thus dealers in yarn and yarn agents spring up where there is a developed weaving industry, whether there is a spinning industry in the same country or not. The developed market for a raw material for which there is a world-wide demand, is found only where the consuming industry has reached a high state of development. Thus the demand for Indian

and Egyptian cotton in Germany is not sufficiently large to call into being a developed national market and these staples are bought from importers in other countries or from the exporters in the countries of origin.

The demand for American cotton, on the other hand, has sufficed to call into existence the comparatively developed market at Bremen which has become the principal cotton market of the whole of Central Europe. The "Bremer Baumwollbörse" is "a society formed to further the interests of those engaged in the German cotton trade and cotton industry." Membership is therefore open to all who fall under these two categories, whether they actually deal in raw cotton or whether they are spinners. The "Baumwollbörse" has three organs:

1. The General Meeting.
2. The Board and its Committees.
3. The Testing-house.

The General Meeting ratifies the accounts, makes the budget, and elects the board, which consists of twelve members resident in Bremen and seven spinners. Of the spinners five are elected by the five great German spinners' organizations, the sixth is elected by the five delegates of these organizations, and the last by the Association of Austrian cotton spinners. From its own numbers the board elects committees entrusted with such tasks as the selection of arbitrators, the regulation of standards, etc.

The business of the exchange is carried on in a magnificent structure in the centre of Bremen, opened in 1902. In this most of the brokers and dealers, whether they are American, English or German firms, have their offices.

The conditions of the exchange lay down conditions for five classes of contracts:—

1. Sales of spot cotton, which need no special comment.
2. Sales "to deliver." In this case the full amount of the contract or at least 10,000 Kg. must be tendered at a time and delivery must be accepted at Bremen. Bremer-

hafen or Geestemünde, if there is at least 10,000 Kg. at the one place.

3. Sales of cotton "to arrive."

4. Sales from the clause "franco Wagon," or free on truck. These may of course be sales of either of the three preceding classes. In fact most contracts are made on these terms, and so convenient are they found by German spinners, that the mere fact that cotton cannot be bought on the same terms from the American exporters and from the other European markets gives the Bremen market a great advantage over all others in the spinners' eyes.

5. Sales c.f. This is the form in which the German spinner buys from other sources than Bremen. For transactions made with Bremen dealers it is very little used.

There are at Bremen no dealings in futures and no regular settlements. A settlement takes place in individual transactions, in cases where the vendor is unable to deliver or else delivers cotton of an inferior grade to that for which the contract was made. How great a divergence from the grade contracted for must be taken as a good tender, depends on the wording of the contract. If it contains a clause that nothing lower than a particular grade will be accepted, then divergences of less than one grade are regulated by the payment of the difference in value between the cotton tendered and that contracted for, plus a fine of 1 pf. per Kg. If the divergence amounts to a whole grade, the buyer has the choice of either accepting delivery on those terms or of closing the transaction according to Paragraph 38 of the "Bedingungen." The vendor according to this section has to pay the value of the cotton which should have been delivered, plus a fine of 1 pf. per Kg. If the parties cannot agree on the market value of the cotton, this is determined by two experts, one appointed by each side. If these cannot come to an understanding they co-opt a chairman and finally either party can appeal to the board. A meeting is then summoned of the committee-for-appointing-

arbitrators and three arbitrators, who have the final decision, are appointed from the members of the exchange.

Such is a brief account of the transactions possible according to the rules of the Bremen Cotton Exchange. What is more important is the question, how the German spinner actually buys his cotton. In this respect English and German practice necessarily diverge widely. In Liverpool the English spinner or his agent buys, as it were, over the counter. He can examine and select his purchase. In Bremen on the other hand there is no considerable stock of cotton, and spot sales have been estimated to make up no more than 10 per cent. of the purchases of spinners. In England the spinner goes to the market. In Germany the market comes to the spinner. The importing houses are all represented at the important spinning centres in each district and make offers to their representatives by telephone. As a rule the agent will receive every week a list on which the points on or off the price of middling American at New York for the various types and qualities are indicated. The agent gives his price to the spinner on the basis of the list and telephones or telegraphs his order to his principal. All such messages have to be sent before the opening at New York can have become known. The dealers at Bremen or Hamburg are then able to cover in Liverpool before New York opens. From Bremen there is a special wire to Liverpool: but this does not appear to be very reliable, since all the most important messages, such as the opening of the Liverpool exchange, are telegraphed to Bremen via New York.

The greater part of spinners' purchases are according to grade. There is little buying by sample. Most of the contracts are for delivery at a specified period, often to deliver a certain quantity at regular intervals, with the "franco wagon" clause. Usually Bremen arbitrage is specified, but the finest grades are usually sold on the basis of mutual confidence between buyer and seller and

in some cases Liverpool arbitrage is made a condition. Liverpool arbitrage is commonly considered more advantageous to the seller, as the grading is not so strict as at Bremen. At Liverpool the cotton is judged a good or a bad tender without reference to any very definite conditions which have to be fulfilled. At Bremen on the other hand the length of staple, colour, etc. which the cotton must show in order to be considered of a certain grade are all very carefully laid down.

Bremen arbitrage is not confined to sales made by Bremen dealers. It is made a condition for instance in most direct purchases from the States. The advantages and disadvantages of such direct purchases are fairly obvious. The spinner receives an unsorted consignment, in which, if he has a good supplier, he is likely to find quite a number of bales of a class superior to that for which he has contracted. On the other hand he has to buy c.f., instead of "free on truck." He has to cover his requirements far in advance and must place a great deal of confidence in his supplier. The result is that direct cotton buying is generally only favoured by those who are on friendly terms with some exporter and know that they can have implicit confidence in him.

From the account which has been given of dealings on the Bremen exchange it will be sufficiently clear that there is little need of regular meetings among the cotton-dealing community at Bremen. There is therefore no exchange where buyers and sellers meet, as there is at Liverpool or New York. In fact the Bremen dealers find it essential to be at their offices all day long, in order to deal with telephone messages from their agents in the country, to arrange sales, and to cover them in Liverpool or New York. The brokers at Bremen accordingly have a far less important position than at Liverpool. In fact they are a comparatively small class, existing merely to negotiate business between the dealers in cases where they

wish to buy small lots of a particular class to make up a delivery.

Most of the important Bremen houses are also members of the Liverpool Cotton Exchange, a privilege which has been extended to them of quite recent years. The concession, however, has not yet been made to the Hamburg dealers and they are consequently at a slight disadvantage.

It has been already mentioned that there is no futures market at Bremen. This is frequently instanced as a great drawback for the German spinner; whether this view is justified is at least very doubtful. The German spinners themselves, when a poll was taken, declared emphatically that they did not desire a futures market at Bremen. On the other hand the dealers are certainly at a disadvantage, since they are unable to cover their sales with the same promptitude that is possible in a market where there are futures. Nor can the risk thus entailed be charged to the spinner in higher prices, for the spinner is not bound to the Bremen market but can buy at Havre or Liverpool, if prices there are more favourable. To Bremen itself therefore the matter is one of great importance and is constantly engaging attention. Some time ago a suggestion came from Hamburg that futures in cotton should be instituted there, since such facilities already exist there in the marketing of other commodities. This plan came to grief owing to Bremen opposition, as it was feared that a futures market at Hamburg would attract other classes of dealings in cotton as well and would gravely impair the prestige of the Bremen exchange. Still more recently it was suggested that Hamburg and Bremen should combine in forming a futures market at Bremen. Such a market it was claimed would attract the whole of the demand for raw cotton of the continent of Europe and would make possible clearing

transactions on a large scale between the three great cotton centres New York, Liverpool and Bremen.*

To speak now of the testing house, it has been pointed out that Bremen is the market for a far more extensive area than merely Germany. Not only do Russia, Switzerland, and above all Austria, cover a great proportion of their requirements there, but Bremen arbitrage is used for a large number of transactions in which the cotton never comes to Bremen at all. This is due largely to the high reputation for integrity enjoyed by the testing-house. Unlike Liverpool, Bremen leaves its "beeidigte Klassierer," the official classifiers, completely in the dark as to the parties interested in a particular lot. They are only informed of the grade of cotton for which the contract was made. The exchange has standards—selected according to the standards of the Liverpool Cotton Association or London official standards—which are in the keeping of the director and the classifiers have to decide whether the lot in dispute is up to standard, and if not, how great the divergence is. From their decision there is an appeal to special arbitrators, who are again left in the dark as to the identity of the parties in dispute and of the subject of disagreement. There can be no doubt therefore that the decision arrived at will be quite impartial.

From the point of view of the spinner the Bremen market fulfils its function well enough. Where the customers are so scattered and the demand is comparatively so small, it is impossible to secure the advantages afforded by a market such as Liverpool; but sales of yarn can be rapidly covered by means of the telephone and the competition of the other markets represented by agents

* These negotiations came to nothing, but a scheme for introduction of futures at Bremen itself has since been sanctioned by the German Government and the Bremen Senate, and dealings on this system are to begin before the end of the year. (*Manchester Guardian*, Sept. 9th, 1912). The commencement of dealings in futures at Bremen has since been postponed until October, 1913.

secures that the price paid is a fair one. The principal drawback is undoubtedly the greater temptation for the German spinner to speculate, to which reference has already been made.

It is the importer whose facilities are inferior to those of his competitors, and here Hamburg is in a still less favourable position than Bremen, since it lacks a direct wire to Liverpool. In either place the dealers lack the facilities for a rapid shifting of their risks, which is of the greatest importance to the smooth working and efficiency of the market.

If the raw cotton market at the disposal of the German industry is in many ways lacking in the facilities afforded by that of Liverpool, the yarn and cloth market are far more backward. It has already been pointed out that each cotton-manufacturing district is grouped round a metropolis in which the commercial activities of the district centre. In the case of the industry of Rhenish Prussia this metropolis is München-Gladbach for the left bank of the Rhine, for the right bank and Westphalia it is Elberfeld-Barmen, for Saxony it is Chemnitz, for Bavaria Augsburg, for Würtemberg Stuttgart, and for Alsace Mulhouse. In each of the towns named a considerable trade takes place in yarns and cloths. Yet in none of them is there a cotton exchange where producers and consumers meet daily or even at frequent intervals for transacting business. Attempts have been made to hold such exchanges. At München-Gladbach spinners and weavers used to meet on Thursdays at the local hotel, but the meetings soon developed into mere social functions and soon afterwards ceased altogether. At Stuttgart a cotton exchange is held on the first Monday after the beginning and the first Monday after the middle of each month and is fairly well attended. The actual business that is transacted on these occasions is, however, very small. Similar arrangements exist at Chemnitz and Mulhouse, and at each of these places the level of prices

of the principal staples is published from time to time by a committee of representative merchants and manufacturers appointed for the purpose. In all centres, however, the bulk of the business is transacted in the office or over the telephone.

As regards the actual selling of the yarns, the spinners usually deal direct with the manufacturers of their own district, but most of them sell a very large part of their production by means of agents in other parts of the country. A large yarn and cloth agent will often sell the production of a number of mills situated in one district—mills in which he is often financially interested—throughout the whole of Germany, by means of agents which he in his turn maintains in the important centres. In other instances the mills themselves will have their own agents in the most important places. In fact it is extremely striking how the spinners and weavers compete with one another in each other's districts. Thus Westphalian yarns are consumed in great quantities in the curtain factories of Saxony and the weaving-sheds of Silesia; Saxon hosiery yarns are consumed in Würtemberg, Bavarian yarns in Rhenish Prussia. These few examples among many will suffice to show how scattered is the market and how various the competition of the German spinner.

The position of the manufacturers of staple cloths for printing or bleaching is naturally much the same as that of the spinners. In their own districts they frequently sell to their customers direct. Elsewhere they make use of agents. Some few firms sell their production partly in the grey state and have the rest bleached or dyed on commission.

The case of manufacturers of coloured goods and fancies is somewhat different. Most of the producers of coloured woven goods finish their products themselves, even if the concern is only a small one. Others have the finishing done on commission and then sell the goods in the

finished state. Most of the makers sell to wholesalers and to the very large retailers, such as the big stores, by means of travellers or agents and concede credits. Some of the biggest firms of the kind even sell through travellers to the smallest retailers. Many manufacturers catering for the home-trade also keep considerable stocks in the principal towns, so that they may supply their customers with small quantities at the shortest notice.

For the purposes of the export trade the manufacturers are represented by agents in the main exporting centres, Hamburg, Bremen, Frankfurt, etc. The Alsatian houses are in addition usually represented in Paris, where their connection still survives from the time previous to the war.

As regards bleaching, dyeing, finishing, and printing, these are in a great many cases all carried out by the same firm. In other instances one or more of the processes are carried out by weavers on their own cloth. So for example flannelettes are to a great extent dyed and printed by the manufacturers of the cloth and even exported by the same firm afterwards. Some of the largest firms, too, who go in for a great variety of articles for the home trade, similarly combine all the functions in addition to spinning and weaving and then sell their products to retailers by means of travellers.

As regards calico-printing more particularly, the printer used to buy the cloth print and finish it and then sell it in the finished state. This is still done in the case of many specialities, such as the "Blaudruks" which play an important part in the home and export trade. Many of the largest print-works have, however, recently been led by heavy losses on their stocks to abandon independent trading altogether and now confine themselves purely to job-printing. There can be little doubt but that this is the soundest policy. To watch markets, to anticipate changes in taste and profit by them is the function of the merchant, who is in close touch with his customers on the spot. The

manufacturer can only safely undertake the mercantile function as well, in cases where the demand is regular, continuous, and close at hand. Where he has to cater for a distant market, as the German printers attempted to do, he has to prepare his novelties months in advance, send them out through exporters and then take his chance of orders being procured on them. Meanwhile he has either to print for stock or at any rate buy his cloth in anticipation. The merchant on the other hand has far better opportunities of foreseeing the size of the demand and therefore is more competent to bear the risk of buying cloth in advance. Considering the matter *a priori* then, the natural division of labour is that the merchant should buy the cloth and sell it and the printer should confine himself to printing. This division of labour is also that which governs most of the English export of prints. It is likely to be increasingly adopted in Germany.

One class of business which comes to German print-works is interesting, since it is quite unknown in England, namely, orders which come from abroad for printing foreign cloth. This is known in the German tariff by the name "Veredelungsverkehr." To English readers the system will be more familiar under its French name, "Admission temporaire." When the cloth enters and leaves the country a seal is attached to each end of the piece, and this seal has to be intact when the cloth goes out again. Otherwise the duty has to be paid. On such a scale is this trade done that the large print-works in Alsace have a customs-house of their own, where the necessary formalities are performed. The amount of cloth printed in this manner will of course vary considerably according as the margin between cloth prices in and outside Germany is small or large. When the margin is small, English cloth may be as dear as German after paying the freight. When it is large the German exporter may find that he cannot compete with German cloth and that he can only sell his German prints by

using the cheaper English raw material. Not a little printing of the kind is also done for Manchester export merchants who find, strange to say, that in spite of the extra freight it is cheaper to have certain classes of printing done in Germany than here. The Alsatian mills also do a fair trade in printing Swiss grey-cloth.

When a trade of this class is done between two protected countries a mutual agreement is of course necessary, since the cloth must be allowed to enter the country of origin again duty-free. An agreement of the kind formerly existed between Austria and Germany, and much Austrian cloth used to be bleached and printed at Langenbielau in Silesia. Austria then gave notice of the termination of the agreement, in order to encourage her own industries and the bleachers and printers of Langenbielau were suddenly cut off from their main source of income. It was then that the special tariff for carrying grey cloth from Southern Germany to Silesia was introduced. This tariff has been the subject of much agitation on the part of the bleachers and printers of Southern Germany, since it has caused a great deal of cloth to be bleached and printed for Berlin houses in Silesia, work which would naturally be done by the Southern bleachers, who are close to the weaving mills. So far the agitation has been without success, largely because it is feared that if the freight were raised again the traffic would go over to the Bohemian railway system, since the distance across Bohemia is somewhat shorter. This may seem an unnecessary digression on a matter of purely local interest. It is instructive, however, as showing the willingness of the state to step in to protect threatened local industries by conceding them special advantages on the state-owned railways. The desirability of such intervention is of course disputable.

The facilities for "admission temporaire" are also important for the industry of Plauen. Not only is a fair amount of embroidery done on foreign cloth but a con-

siderable quantity of Swiss embroideries are bleached and finished at Plauen and then returned to Switzerland. In former times there was also an important trade of the kind on the North-Western frontier, many German firms having yarn dyeing and bleaching plants in Holland or Belgium owing to the lower wages there. This trade, however, has been killed by hostile legislation.

An account of the organization of an industry would be incomplete without a word on its financing. The number of public limited companies in the German cotton industry is very small indeed compared with the number of private firms and private limited companies. Successful enterprise on the part of individuals is always necessary in order to rouse the interest of the investing public and no doubt the number of public companies will increase as the industry continues to expand and prosper. Meanwhile the German cotton industry is at a disadvantage compared with the Lancashire cotton industry from other aspects of the question of finance. Roughly speaking, money is, taking one year with another, about 1 per cent. dearer in Germany than in England, which is all the more important since the German manufacturer has to give credit to a far greater extent than is customary in England. The facilities afforded by the banks in the shape of overdrafts, which play such an important part in the commercial and perhaps to a less degree in the manufacturing branches of the industry in Lancashire, are far superior to similar facilities afforded by German banks. The German banks on the other hand are far less loth to finance industrial undertakings by actually taking shares, and there are cases of cotton mills the whole share-capital of which is held by a single bank.

CHAPTER V.

ASSOCIATIONS OF EMPLOYERS AND EMPLOYED.

TRADE unions of whatever kind are directed towards a more effectual safeguarding of certain interests, which are usually in conflict with the interests of other parties. Before treating of the organization of capital and labour in an industry, it is therefore useful to pass in review the lines of cleavage, which divide the industry into opposing or competing groups. It will be convenient to treat of the employer first.

Enough has been already said to show how the German cotton industry is divided into a number of sections locally and politically. These sections enjoy different working conditions, have different labour problems to face, and, owing to their competition with one another not only in external markets but in different parts of Germany, may have conflicting interests in such questions as railway rates, factory legislation, and other kindred subjects. All these differences are rendered more acute by inter-state jealousies and religious prejudices. Beyond this there is, in a country whose industries have been nurtured and are maintained behind a tariff, a special danger of a conflict of interests between the various branches of an industry. In the cotton industry this conflict of interests is very clear. A high duty on yarns is essential for the spinner in order to protect him from the competition of older and more efficient industries abroad. The very same protective duties which are a *sine qua non* to the spinning industry, are considered by the weaving interests an insurmountable obstacle in the way of the development of an export trade. Thus there are two natural lines of cleavage, the first between the

employers of the various districts, the second between the different branches of the industry throughout Germany. In Germany, however, political divisions have usually proved too strong for the professional community of interests and independent organizations on professional lines have sprung up in the various areas, which have frequently failed to come to an agreement with one another even on matters of importance to the industry throughout the country.

Of course the same groups may also organize themselves in several associations in order to pursue different ends. One organization may devote itself exclusively to coping with the increasing demands of organized labour and to taking measures to fight such demands. Another may devote itself to representing the interests of the industry before the government of the country, to preventing troublesome restrictions on the relations between employers and employed or ill-considered taxation likely to affect the ability of the industry to compete in foreign markets, and so forth.

In the light of these distinctions we shall now examine some of the characteristic types of organizations of employers which exist in the German cotton industry.

In most of the towns in which there is any considerable concentration of the industry, there is usually a local association, composed of all the textile employers of the place, for the purpose of presenting an united front to the activities of the operatives' union. Good instances of such "Fabrikantenvereine" in their narrowest sense exist at Werdau and Crimmitschau in Saxony. In these places the employers have been more active than elsewhere, thanks largely to the devastating strike which took place at Crimmitschau in 1903. In both towns they maintain their own labour exchanges and no employer is allowed to give work to anyone who cannot show the "Arbeitsnachweisschein" or ticket of the exchange. In the books of the exchange are entered the name, occupa-

tion, date of birth, residence, etc., of each applicant, as well as the appointment he receives, with the date at which he takes it up. The ticket is nominally issued to all whose papers are in order, but of course the system can easily be abused, as the history of all the workpeople who have previously been employed in the town is available, and anyone who has shown himself undesirably active as an agitator or has roused the displeasure of his employers in any way is liable to be boycotted, even though he does receive the ticket. The system is far more strictly carried through at Crimmitschau than at Werdau, where some of the employers find it simpler to obtain their workpeople by other means than through the exchange. Labour exchanges on these lines do not exist elsewhere in the cotton trade but municipal labour exchanges of course exist in all large German towns, and the operatives' unions are also active in finding work for their members.

A local "Fabrikantenverein," such as those mentioned, will also deal with questions of general policy in the local industry, such as the level of wages, the curtailment of production, should this be desirable, the standpoint that should be taken up towards new legislation and others. Where the particular industry is not, as is the case in Werdau and Crimmitschau, confined to a small area but uniform conditions exist in a larger district, similar functions will be performed by a more comprehensive organization, embracing the mills of the whole district. So for instance there is the "Verband Süddeutscher Textilarbeitgeber," whose aim, according to its statutes, is the association of the employers of the South German Textile Industries for the purpose of maintaining regulated relations with the workpeople and ensuring that its members will take up an uniform position in questions relating to the contract between employer and employed ("Arbeitsvertrag") As is natural in an association numbering both spinners and weavers among its members,

the statutes specifically state that the treatment of economic and especially tariff questions does not fall within the scope of the association. The contribution of each member is based on the amount of the wages and salaries paid. The members agree not to employ work-people who have left their work without justification; to resist the demands of the operatives in individual works; to refuse exaggerated demands for increases in wages; to resist on principle all demands of the operatives which savour of a claim on their part to have a say in the management of the mills, especially as regards the employment or dismissal of any workman; to take united action against strikes and agitations by rewarding those willing to work, by lock-outs and other means; finally, to compensate members for losses sustained owing to such strikes and lock-outs. It is pretty clear that an organization of this kind—and the one under discussion is a good example of the whole class—is directed almost exclusively against the activities of organized labour. Further all the ends pursued are the common interests of the whole textile employers of the neighbourhood. It comprises therefore all classes of employers. Side by side with it in Southern Germany exists the “Verein Süddeutscher Baumwollindustrieller” for the purpose of watching the general interests of the South German Cotton industry in so far as they are common to all engaged in it. Where the local “Fabrikantenverein” exists within one of these larger organizations the employers are usually members of both and the weightier influence of the larger organization is called in in times of crisis.

It remains to speak of the strictly professional organizations, which step in where the interests of the various branches of the industry diverge. These deal with such questions as the amount of the tariff on yarns, facilities for the “admission temporaire” of cloth, in certain circumstances also with the curtailment of production in one branch or the other. On occasion such organizations

have also been known to attempt to establish uniform prices, but the success of these attempts has usually been of short duration, owing to the difficulty of preventing breaches of the agreement. As has been already hinted, these organizations are also on a local basis.

The local rivalry of these associations has proved a great source of weakness in every crisis affecting the industry as a whole. For instance it has never yet been possible to realize an uniform curtailment of production in the whole industry at once. The fact that one or more districts at such a time have sufficient orders to continue working has led these to continue on full time, and this has prevented many employers in less fortunate districts from agreeing to work short time through fear of losing ground. Even in single districts it has been found difficult to arrive at uniform action. In 1908 when the Bavarian and Württemberg spinners decided to work short time only 80 per cent. actually did so, while the spinners of Alsace and the North-Western districts kept aloof altogether. It is noteworthy that on this occasion most of the employers thought well to compensate their work-people for the loss of wages sustained, for fear they might leave their work and go over to other occupations.

The same rivalry has always been an insurmountable obstacle in the way of a regulation of prices. In the case of the coarse counts, where the German spinner is adequately protected from foreign competition such an agreement should be quite feasible. As mentioned above attempts have been made in this direction but they have always been confined to one district. The strong spinners organization of Westphalia and the Rhine province has been especially active, and in 1899 a majority of spinners actually agreed not to sell yarns without a definite margin over the price of raw cotton determined by the central organization. Consumers of yarns in the district were of course at once up in arms and since there was little to prevent them from covering their require-

ments outside the district, the temptation to sell below the fixed rates soon became too strong for many of the members and the agreement came to grief. Similar agreements made since have been equally short-lived.

The only instance where a convention of the kind has lasted any length of time in the cotton industry has been in the manufacturing branch, and then only in a single speciality, namely Zanella. This convention, founded in 1894, to-day embraces all the firms producing the article. In addition to regulating prices and conditions of sale it allots to each of its members, according to the number of their looms, a certain production for the home market. If a firm wishes to put more than its share of the article on the market it must buy the surplus from firms which have not yet disposed of their quota. The export trade, however, is not limited in any way. The long survival of this convention—exceptional as it is—is to be ascribed to quite exceptional circumstances. The article to which it refers is almost confined to Elberfeld and neighbourhood. Moreover it is usually only one among a number of articles produced by the firms which weave it, so that its price can never be a vital question to the maker. Lastly there are no small firms engaged in the trade.

What is wanting in the organization of the employers of the German cotton industry is centralization. It is of minor importance that the larger organizations are affiliated to such bodies as the "Zentralverband Deutscher Industrieller," which embrace all industries and champion the cause of industry as a whole against agrarianism on the one hand and socialism on the other. The cotton industry as such is without a central organization which can impose an uniform policy on all, whether it be in the case of a commercial crisis or a labour dispute. It is fortunate for the employers that the ranks of labour also show gaping clefts.

In the English cotton industry labour may be divided into unionist and non-unionist. If an operative decides

to join an organization he joins the local trades-union to which the members of his branch of the industry belong. In Germany there are in all textile centres of importance at least three organizations which such an operative might join. These are in the order of their importance.

1. "Der Verband Deutscher Textilarbeiter," the social-democratic union.
2. "Der Zentralverband Christlicher Textilarbeiter Deutschlands," associated with the Centre Party.
3. "Der Stuhl and Textilarbeiter Verband," the Hirsch-Duncker association.

At the end of 1909 the numbers belonging to these three organizations were as follows:—

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Verband Deutscher Textilarbeiter	69000	36000	105000
Zentralverband Christlicher Textilarbeiter	25000	10000	35000
Gewerkverein Deutscher Textilarbeiter Hirsch-Duncker	5000	2000	7000
Other organizations approx.	2000	1000	3000
Total Organized	101000	49000	150000
Not organized approx.	399000	451000	850000

It will be seen that of the men engaged in the textile industry about 25 per cent. are organized, of the women about 11 per cent., and of the whole body of operatives men and women about 18 per cent.

Of the three the Hirsch-Duncker organization, being copied directly from the English trades-union, has as far as its aspirations are concerned most in common with it. Its numerical weakness, however, prevents it from pursuing the ends of a trades-union with any conspicuous success. In most places the "Hirsche" are numbered by tens rather than hundreds. The numbers in fact are too small to be of any importance even in helping one

of the more important organizations to carry through its policy.

As regards the two other organizations the bare figures do not really give a true picture of their strength in some of the larger centres. The fact must not be lost sight of that in the country districts the relations between employer and employed are still entirely patriarchal in character, so that attempts to enrol members in trades-unions have only very small hopes of success. The employers house their workpeople, accommodate them with loans when their funds are low, see that they obtain their provisions on favourable terms, and generally take care that they have little cause to grumble. The workpeople do not wish to risk the good will of their patrons for the more hypothetical and certainly more expensive benefits promised them by the agitators of the unions. The unions for their part have not spared money and work in tilling even this unpromising soil. But the great tracts which still remain almost quite unorganized fall heavily into the scale in reducing the average over the whole country. Even in the main centres the proportion of organized to unorganized is far from uniform. The organization is strongest in Saxony, where the socialists rule almost unchallenged. At Crimmitschau quite one half of all the operatives are members of the "Freie Gewerkschaft." On the other hand at Augsburg and Mulhouse, although the number of operatives in each of these places is twice as great as the number at Crimmitschau, only 11 per cent. and 7 per cent. are organized. The reason for such divergencies are not far to seek. Crimmitschau with its small concerns, spinning the lowest grades of cotton and waste, has almost the worst working conditions of any town in Germany. The employers also have done least for their workpeople. At Augsburg and Mulhouse, on the other hand, old concerns, boasting some of the most honoured names in the history of textiles on the continent, have since their foundation fostered their

employees with almost paternal care. It was a Mulhouse manufacturer who could boast before the Reichstag: "With us in Upper Alsace there is no such thing as social democracy. The humanity of the employers has given satisfaction to the working classes. The best way to combat socialism is to copy the institutions we have set up in Mulhouse." Of these efforts on the part of German employers for the welfare of their workpeople more will be said later. Suffice it here to notice that they have proved in many places an insurmountable obstacle to the organization of labour and are consequently looked at askance by the trades-unions.

As the names "Verband Deutscher Textilarbeiter" and "Zentralverband Christlicher Textilarbeiter" imply, both these organizations embrace all classes of textile operatives. There is no separate organization for cotton operatives, much less are there separate unions for spinners, card room operatives, weavers, etc., as there are in Lancashire. There is in Germany no room for such subdivisions in the organization. The numbers in the unions are small enough as they are. A union confined even to the best represented class, the weavers, would be quite impotent.

However, the comprehensive scope of the unions has its advantages as well as its disadvantages. In labour disputes there is no chance of the various classes of operatives hampering one another and once action is taken by the union all classes act in concert. The disadvantages—which are usually not recognized by German trade-unionists—lie in the fact that an all-embracing organization such as those under discussion is less competent to represent the special interests of one class of operatives as distinguished from the interests of organized labour as a whole. It is impossible to find a district-secretary of a union, who is competent to give an expert opinion on all the difficulties which may crop up in the various concerns, engaged in the various branches of the

industry. The secretary of an English spinners' union can give an expert opinion on the conditions under which spinners should work, on the speed of the machinery, on the material that is being employed, on the reasonableness or unreasonableness of any demand the employer may make. The secretary of a German union has usually worked in a textile mill of some kind, but he may have worked in a worsted-spinning mill and be secretary in a cotton-weaving centre and vice versa. In any case his expert knowledge in case of a dispute is not likely to be of any value in putting the case of the operatives to the employers. Even if he were allowed to enter the mill and examine the cause of complaint on the spot, he is not competent to form an opinion. It is in part for this reason that German employers have in most cases refused to confer with the union secretary at all.

This question of recognition is of course complicated by the antagonism between the socialist and the Christian organizations. The two secretaries by no means always work together. Cases occur where the one organization declares a strike and the other refuses its support. Nor is this unnatural when one considers the fundamental differences of standpoint, from which the two organizations regard the relations between employers and employed.

It is a mistake to consider that the German trade unions are primarily political or that they are at the beck and call of the political parties which originally founded them. In England the political activities of labour sprung out of trades-unionism. In Germany the trade-unions—the "Hirsch-Duncker" organizations may be left out of the discussion, since in the cotton industry their importance is infinitesimal—were founded for political ends, the "Freie Gewerkschaften" as a means of spreading and making palatable the tenets of the social democratic party among the working classes, the "Christliche Gewerkschaften," as a counter move on the part of

the Centre against these socialist activities. Now, however, both organizations are emancipating themselves more and more from their political sponsors and working independently of political parties for the special ends of the labouring-class. Meanwhile the rallying-cry of the "Freie Gewerkschaft" is still that of class warfare. The employers are the spoliators, the workers the spoliated. The standpoint of the Christians, on the other hand, is economic. It is the solidarity of interests between employers and employed in the welfare of the industry as a whole. In time of industrial peace there are constant recriminations between the two parties in the press and on the platform. In agitations for higher wages or better conditions they more often unite than not. The employer is then faced with the problem of negotiating with the representatives of three different classes of his workpeople, the socialists, the Christians, and the unorganized. Nominally the "Arbeiterausschuss," or workmen's committee, usually the representatives of the workmen for the administration of the sickness-insurance of the mill, are the representatives of all the workpeople of the mill but by the organized section at least they are only in special cases recognized as such. In most cases the employers merely lay down the terms which the other side may accept or refuse. Where, however, they have consented to meet and bargain with the representatives of the unions they have usually had little cause for complaint.

A signal instance of a successful result attained by such negotiations is the wages list of a Mulhouse spinning firm. The history of this tariff is as follows: A strike broke out in the mill in question in 1906. The manufacturers of the town at once declared a general lock-out but raised this again after a time, thus throwing the firm on its own resources. A tariff was then drawn up and signed by the firm and the "Arbeiterausschuss" and was ratified by the Social Democratic union. When the tariff was renewed in 1909 it was also ratified by a representative

of the Christian union. This appears to be the only instance in the German cotton industry of a wages-list fixed by arrangement between employers and the representatives of organized labour. The agreement is worthy of closer examination. A number of its clauses merely lay down hours of work, systems and rates of paying wages, compensation in case of a breakdown of machinery, a fortnight's notice on both sides, and arrange other matters of detail. The other clauses, however, are of more general interest. Thus it is agreed that the "Arbeiterrausschuss," to which the firm has always conceded considerable influence, should continue while the agreement is in force and that minutes should be kept of its meetings with the representatives of the firm. The unions who have signed the agreement undertake not to approach the firm with any fresh demands for the three years of its duration. In return the firm agrees to remain passive in face of any propaganda for the unions in question, so long as such propaganda does not violate the regulations of the mill or trespass on the liberties of the individual. The agreement seems to offer substantial advantages to both sides. The employers by a slight deflection from the narrow path of loyalty to their class have purchased a temporary immunity from labour troubles. The workpeople have obtained more stable conditions of employment.

Other wages lists based on mutual agreements between employers and employed exist in the weaving and dyeing industry of Gera and Meerane, where there is one list for all the mills. These agreements, however, do not fall into the scope of the present work. The list which exists at Goeppingen in Würtemberg for heavy coloured goods was signed by the employers and a commission consisting of a committee of four workmen from each of the mills. Of these four workpeople three are elected by the operatives themselves and the fourth is appointed by the principal of the firm.

The average contribution of the cotton operatives to their trades-union is from 4d. to 5d. per week. The highest classes of the Social Democrats and Christians pay respectively 60 pf. (7d.) and 70 pf. (8½d.). The benefits which the members receive are naturally not very high. More money is expended for strike pay than for any other single benefit, even in normal years. After this, payments to members who have lost their employment on account of their activity in the cause are the most important drain on the resources. Next in importance are the papers which are published weekly by each of the unions, and the rest of the funds go in payments to unemployed, burial money, and other benefits which are still more or less on trial. Sickness insurance is unimportant, since all the members are in the national scheme.

There remains to be described one more type of organization, which is found in Augsburg, and is known as the "Gelbe Vereine" or "yellow societies." These organizations are due to the ingenuity of an Augsburg manufacturer, and consist of an organization of the operatives of single mills under the auspices of their employers and with a subsidy from these. It is not surprising to find that the first rule of these associations runs as follows: "The purpose of the association is to unite the operatives working in the — Mill, who do not belong to the Social Democratic party or to any organization, for the purpose of a suitable representation of their interests." The rules go on to promise the members various benefits in case of sickness, death, and poverty, and finally a Christmas celebration with presents for their families. The annual subscription is 1/-. It is fairly clear that this is nothing more nor less than a payment to the operatives for not organizing. The scheme has, like the "Ordnungsliebende," or "Order-loving" societies, which preceded it, not always been rewarded by success. Cases have occurred where even "Yellow" unions have proved obstreperous, and there is certainly the danger

that if the employers take the trouble to organize their operatives those operatives may be taught the lesson of organizing in their own way later.

The trades-union movement in Germany, compared with the same movement in England, is still in its infancy. The proportion of organized to unorganized is still very small and the efficiency of the organization is further impaired by the split between the two most important unions. The German unions, unlike the English, did not grow up with the industry and specialize more and more with the growing specialism of the industry. They were, rather, superimposed upon an already developed industry and left to adapt themselves to conditions already existing. Those conditions, moreover, by their very nature made the German cotton industry a difficult field for organization. The operatives were not collected in centres of population where propaganda can rely on contagion, but scattered over the countryside. They were the nurselings of an autocratic government and the foster-children of a paternal employer. Their wages were paid in many other ways besides cash payments, and were calculated to provide with the assistance of the employer's charities a bearable existence, rather than to remunerate fairly the tasks performed. There was a wealth of evils to be remedied and many of them are still unremedied to-day.

CHAPTER VI.

THE LOT OF THE OPERATIVE.

IN the study of an industry from the economic standpoint the study of the life of the operatives engaged in it is not the least interesting nor the least important part. It is highly interesting, because it deals not merely with bald facts and figures but with human beings and their struggles and triumphs. It is important, because our estimate of an industry as a national asset depends very largely on our estimate of its social value, of the opportunities it affords to those who live by it.

It will be convenient to deal first with the standard of life of the German cotton worker, which, leaving on one side for the moment his character and tastes, is determined in the main by the money-wage he earns, taken in conjunction with its buying power.

The actual wages earned by the various classes of operatives in the spinning and weaving branches of the cotton industry will be found set out in tabular form at the end of this chapter. It will be seen that the wages of the same class of operatives vary considerably from district to district. This is partly accounted for by the varying efficiency of the operatives in different parts of the country, partly by varying rates due to the unequal industrial development of the various areas. Further the wages of the German operatives are lower than the wages earned by the corresponding class of operatives in Lancashire. This is particularly evident with regard to the men. The wages earned in those departments where women exclusively are employed, *e.g.*, on flyer-frames and ring-frames, are, in the districts where wages are highest, not far different from those earned by the same

classes of operatives in England. In weaving sheds the women generally earn less than the men, because it is customary to give them lighter and less remunerative work. In some mills, too, the piece-rates paid to women are lower than those paid to men.

As a general rule wages are paid fortnightly. In some cases an intermediate payment amounting to rather less than one half of the average fortnightly wage earned by the operative, is made between the regular pay-days. The pay-day is usually towards the end of the week and wages are then paid for the fortnight ending on the previous Monday, so that the employer always has four to five days' wages in hand, as a reserve to compensate him in case of wilful damage or breach of contract on the part of the operative. The system of fines for inferior work and insubordination is much in vogue and is a constant subject for complaint on the part of the trades-unions.

Premium-systems also of various forms are found in a number of mills. Most common is the system by which an increasing premium is paid according to the work performed or the wages earned, as soon as a certain fixed minimum has been attained. To take a concrete case from an Alsatian mill: there is no premium for two-loom weavers if less than M6,30 is earned in a fortnight. When M6,30 is earned the weaver receives M1,30 premium. For each additional 20 pf. earned 20 pf. additional premium is paid up to M23,30, when the maximum premium is reached. In another case, this time from Württemberg, when M6 have been earned on one loom a premium of 40 pf. is added, if M7 have been earned, the premium is 60 pf, if M8-10, 80 pf. Tacklers and gaiters almost everywhere are paid under a premium system. They receive a certain fixed sum as wage and an additional sum which varies according to the production of the looms under their charge. In the spinning branch the premium often takes the form of a prize given for

the best production arrived at on each count in each fortnight. In one mill there are fortnightly prizes of M8 and M4 respectively for the best and second best performance on each count.

In a village in Rhenish Prussia the following very instructive system is in force in the mills by arrangement between the manufacturers of the place. The male weavers are divided into six classes according to the number of years they have worked at the mill in which they are employed. The weavers are promoted one class for each year they have been in the same employ and each class means a rise in the piece-rate paid, of 4 per cent. After six years the rate remains the same. If an operative leaves his employment in one mill and goes over to another he is automatically put back to the first class and his wages are reduced accordingly. The women remain permanently in the lowest class. This is one device to prevent the operatives from changing their employment too easily. Another somewhat less objectionable method, consists in giving presents to the operatives when they have been in the same employment a certain number of years and increasing these presents as the number of years increases.

The trade-unions complain bitterly of these premium systems and their abolition is usually one of the demands made in the case of a labour-dispute. It is certainly undesirable that the rate at which wages are being paid should be obscured by unnecessary complications. They make comparisons between the wages being paid at one mill and those being paid at another extremely difficult and bring about a state of affairs in which the operatives do not know what amount is really due to them. The wages-list of a spinning or weaving mill is sufficiently complicated without such additions.

With the exception of blowing-room and card-room workers all classes of adult operatives in a German spinning mill are on piece-rates but there is a great

variety of methods on which wages are calculated. In the weaving-sheds all except the sizers are on piece-rates. The sizers are usually paid a time wage, as otherwise they are considered likely to let the machine run too fast. In the mills where they are paid by the work done they have usually no cause to grumble, as they generally succeed in earning considerably more than when paid by the hour. The rates at which wages are being paid has according to the German law to be hung up in a conspicuous place in the mill. Very few of the operatives are, however, able to work out what their count or cloth pays, and if the trade union secretary wishes to find out the rates, he has to let the members copy out the table piece-meal, whenever they get an opportunity to do so unobserved.

The increase in the wages earned by the German cotton operative since 1870 has been remarkable, as appears from the following figures, which refer to Mulhouse. The amount earned by the most important categories of operatives in a fortnight are given in francs.

		1870.	1876.	1890.	1900.	1910.
		In 12 working days of 11 hours.			In 112 hours.	
Blowing-room	...	18	20-24	20-25	25-28	30-38
Flyer-frames	...	24-27	27-36	38-40	32-42	35-42
Mule-spinners	...	40-48	42-50	60-65	62-70	65-75
Beaming	...	25-50	26	40	40-50	42-47
Sizing	...	50	50	55	55-70	60
Weavers	...	26	30	43	43-50	av. 48

These are the figures in a district where the industry was already highly developed in 1870. In other districts of Germany, where the main development of the industry has taken place since 1870, the increase would appear even more striking, especially in the last decade. It is no exaggeration to assert that, over Germany as a whole, the earnings of cotton operatives have increased from 10 per cent. to 15 per cent. during the last decade alone.

In estimating the remuneration given to the German

cotton-operative there is another factor to be taken into account besides the money-wage paid. It has been shown how very scattered the German cotton industry is and how in consequence of this the operative body is split into comparatively small units. Now an isolated mill leaves the mill-hands no choice of employment. The employer therefore has on the one hand little competition to fear in the labour-market. On the other hand he knows that if he takes measures to increase the material welfare of his workpeople, it is he and no other who will in due course benefit by the increased efficiency resulting from their higher standard of life. When the social conditions under which the workpeople live come to be examined it will become clear how much the employers have done and continue to do in this direction in almost every part of the country, and more especially where the industry is oldest. These efforts have been comprehensively stigmatised by the socialist press with the contemptuous phrase "The Welfare Swindle." Nor is such "Welfare work" the amiable weakness of a too generous employer. Money spent on "Welfare Work" will tend to keep money-wages lower, and the benefits received by the operatives must be regarded in the light of an addition to their earnings. In some of the remoter villages the wages paid alone would be inadequate to keep a family in reasonable comfort. In such cases the cheap lodging and other assistance provided by the employer is of the highest importance.

Taking everything into consideration the standard of life of the German cotton operative compares unfavourably with that of the Lancashire cotton operative. Meat is seen comparatively rarely on the table and is bought in very small quantities at a time, as prices are high. A good deal of sausage of all kinds is consumed, but rye bread and vegetables, which in the country districts are naturally cheap and are often grown by the operatives themselves, are the main articles of diet. Prices of food-stuffs have risen enormously during the last ten years.

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The following figures, which show the extent of the rise in the town of Chemnitz, may be taken as representative :

	1900	1911
$\frac{1}{2}$ kg. Beef	M 0,70	M 0,90
$\frac{1}{2}$ kg. Pork	0,80	0,90
$\frac{1}{2}$ kg. Veal	0,70	0,95
$\frac{1}{2}$ kg. Mutton	0,70	0,90
$\frac{1}{2}$ kg. Butter	1,28	1,50
$\frac{1}{2}$ kg. Rye bread, I	0,12	0,13
II	0,11	0,12
$\frac{1}{2}$ kg. Wheat flour	0,16	0,22
$\frac{1}{2}$ kg. Rice	0,24	0,25
$\frac{1}{2}$ kg. Coffee	1,40	1,60
$\frac{1}{2}$ kg. Sugar	0,32	0,33
15 Eggs	0,90	1,10
100lbs. Potatoes	2,50	4, 50-5, 50
5 Ltr. Milk	0,20	0,24
1 Cubic metre wood for fuel	12,00	13,00
100lbs. Coal	1,18	1,40

The average prices for tenements in Chemnitz have increased during the same period as follows:—

Number of Rooms	1	2	3	4
1900	M 150	270	380	500
1910-11	M 195	345	485	660

From the above figures, which have been compiled by the statistical office of the town of Chemnitz, it will be seen that the cost of food and house to the operatives of the town has increased in the last ten years by 20 to 30 per cent., an increase which more than compensates for the rise in wages during the same period.

As regards clothing, the ready-made clothing industry of Germany provides the German workpeople with cheap and suitable dress. Both men and women are dressed in the simplest possible manner, on Sundays, as well as in the week. Cheap finery is almost totally absent.

The same strict utilitarianism is found in the furnish-

ing of the home. The principal ornament of the rooms is usually their cleanliness. The simple and useful furniture on the well scrubbed boards is pleasant to look at, even if it would not appeal to English ideas of comfort.

A large number of cotton operatives are members of the co-operative societies, which exist in all the centres of importance and in a great number of the smaller places as well. Some of these stores bake their own bread, but there is otherwise very little co-operative production.* Most of the societies are managed by the leaders of one or other of the trade unions although they are nominally quite independent of these.

The German workman is housed mainly in tenement dwellings. Only in rural districts, where land is very cheap and in cases where the employer has seen fit to construct small cottages, has each family a cottage of its own. The most usual dwelling for a cotton operative consists of a bedroom, a living-room and a kitchen. Families able to afford two and three bed-rooms are very few. In some cases the kitchen is large enough to serve as a living-room but it is often little more than a small annexe to the living-room. In most tenement houses a family will have in addition to the rooms mentioned an attic, which will often be sublet to a lodger, and space for the storage of fuel in the cellar. The rent of a dwelling of two rooms and a kitchen is usually from 3 to 6 M. per week. The lower figure applies to country villages and small towns, the higher to textile centres such as Mulhouse or Chemnitz. In remote districts and where the houses are the property of the mill much lower rents than 3 M. per week are also found. The lodger will usually pay 1 M. per day for food and lodging or else 2.50 to 3 M. per week for bed and breakfast. In the towns the houses usually contain four or else eight tenements. Some are even larger. In the most modern there is sometimes a small vestibule, but in the vast majority the

* There is a small concern, run on co-operative lines near Hof, engaged in weaving floor-cloths, partly on hand-looms, partly on power-looms.

outside door opens either into the kitchen or into the living-room. The street door is frequently placed in the side of the house, so as to give a tidier appearance to the road.

In the housing of the working-classes an important part is played on the one hand by the employers of labour and on the other by building societies. The employers as landlords may be divided into two classes, (1) those who look upon their workmen's houses as a disagreeable necessity and (2) those who regard them as an opportunity to exercise a beneficent influence on the conditions under which their employees live. In many places it would have been quite out of the question to start an industrial concern without at the same time providing housing accommodation, or what is known in Germany as an "Arbeiterkolonie." Many of these "workmens' colonies" are to-day of considerable age and do not embody any of those improvements which experience and study have shown to be desirable. Thus in one case the operatives are housed in a species of barracks, with a number of staircases—each with tenements on either side—all leading into the same gravelled courtyard. Another firm houses some of its operatives in a disused monastery. The houses which are erected now, however, usually embody all the most recent improvements. Moreover strict rules are laid down by the employer, which require the tenants, on pain of an increase in rent, to keep their own rooms as well as the staircases clean and tidy.

A few firms have built model villages for their work-people. The two most attractive are one near Elberfeld and one at Reutlingen in Württemberg.

The example in Rhenish Prussia was intended to give the operatives an opportunity to become the owners of their own houses by means of annual payments, assisted by substantial contributions from the employer. Thus a house could become the property of the employee after 17 years by annual payments of 8 per cent. of the first cost.

Each year the employer assisted him with a premium as follows :—

If he had been employed in the mill one year premium
15 per cent. of the payment.

If he had been employed in the mill five years premium
20 per cent. of the payment.

If he had been employed in the mill ten years premium
25 per cent. of the payment.

An additional payment of 5 per cent. was paid for each child employed in the mill for at least one year, so long as the total premium did not exceed 35 per cent. of the employee's payment.

This system was introduced in 1878 and lasted until 1901. It was based on an average first cost of each house of about 3,600 M. Unfortunately the cost of similar houses had by 1901 risen to no less than 5,000 M, which would mean a larger annual payment on the part of the operative than all but very few could afford. It has therefore been found necessary to let the most recently constructed houses, the annual rent being 6 per cent. of the cost, while premiums are still paid by the firm on similar terms to those described above.

The firm also provides its operatives with a club-house, in which festivities can be held and where during working hours there is a crèche with a lady, paid by the firm, in charge. In addition there are baths and a laundry presented by one of the partners. In this laundry each family can have its washing done at a fixed charge of 20 M. per annum, whatever be the size of the family. As might be expected, the firm has to assist the scheme with considerable sums but it is amply rewarded by the healthier homes which are the result. The women have only to bring the clothes to be washed and to call for them when ready. It is certainly a plan which is worthy of imitation.

The Württemberg model-village is not intended to

provide the operatives with houses of their own but it is otherwise far more ambitious. The designs both for the laying-out of the village as a whole and for the individual houses are the work of an architect of repute and the result he has achieved is picturesque in the extreme. The most common types of house contain two, three and four rooms apart from the kitchen. Every house has a garden, which is generally used for cultivating vegetables. The village has some 900 inhabitants of whom between 300 and 400 are employed at the mill. It has its own school, inn, and co-operative store, all managed by the firm, and there are also several wash-houses, which are at the disposal of the village house-wives at a small fee. It must be admitted that for the average working-man, this village has not proved a success, as most of the original tenants failed to keep their houses well enough to maintain the appearance of the village. A model-village requires model-villagers; otherwise it will rapidly deteriorate. At present most of the houses are occupied by officials, overlookers, and clerks, rather than by the real operative class.

Usually the rents charged by the employers are considerably below those ordinarily paid and employers generally consider 2 per cent. a sufficient return on the capital invested in housing-schemes. On the other hand, of course, if the occupier leaves the mill for any reason, he has also to vacate his house. In some cases the occupiers are not even allowed to keep their children in the houses if they seek work elsewhere than at the mill. If several children in the same family do not enter the mill, the parents are liable to receive notice to quit their house. On the other hand a reduction in the rent is often made for each child or member of the family working in the mill. The uses to which the workmen's colonies can be put are sufficiently clear from this. They are at the same time of course a powerful weapon in the hands of the employer at a time of strike, since he may threaten

his workpeople with ejection from their homes, a very serious threat in a country district where there is no other accommodation.

Apart from the activities of employers, a great deal is also done for the better housing of textile workers by building societies and also by the municipalities. Of the building societies the best known is the "*Société Mulhousienne de Cités Ouvrières*." This society is a limited company founded in 1853 by a few of the largest mill-owners of Mulhouse. It has erected a whole suburb, consisting mainly of detached and semi-detached houses, each with a small garden. The principle of the society has been to provide the working man with healthy houses at an average rental of 20/- to 30/- per month, which would make him the owner of his house at the end of 20 years. In recent years two other groups of houses on the same principle have been begun and have easily found tenants, although the cost of erection and consequently the rent have increased considerably. The "*Cité Ouvrière*" proper is now somewhat antiquated and the houses have a good many drawbacks. They have also in the course of time been much disfigured by additions and alterations on the part of the tenants, by the erection of wooden outhouses, etc. In addition most of the houses have frequently changed hands since they were acquired by their original tenants, and many of them are to-day in the hands of small shop-keepers and other classes which were never intended to occupy them by the pioneers of the movement. The worst evil indeed has been caused by speculators, who have gained possession of the houses and by raising the rents have put them beyond the reach of the average working-man. Still, a moderate number of genuine operatives' families remains in the Cité, which certainly provides even now better accommodation than the tenement houses of most other textile towns. Whether the Cité has been a success or a failure—and it has been pronounced both the one and the other in no hesitating

manner by those who have written about it—it has been most wonderfully rich in lessons for all the housing schemes which have succeeded it.

Many of these lessons appear clearly enough in the rules which the municipality of Ulm has made for the working-men's houses which it has constructed on a considerable scale. One of them at least is worth repeating here:—

The town reserves to itself the right to repurchase any house

- (1) if the owner desires to sell
- (2) if he lets the house at a higher rent than that fixed by the authorities
- (3) if he ceases to occupy the house himself
- (4) if he lets rooms without the permission of the authorities
- (5) if he allows any trade to be carried on in the house by third parties without the permission of the authorities.

The town of Ulm has also erected a large number of tenement houses, in which the tenements are only let.

By the laws of 1889 and 1900 the building societies are able to obtain money on mortgage from the accumulated funds of the invalidity and old age insurance at 3 per cent., a facility to which a large number of building societies owe their existence. The "Bauverein Gronau" is an instance. This building society has a monthly subscription of 2 M. and a member can ask to have a house built when he has paid 150 M. in subscriptions or otherwise. The annual rent paid is 4 per cent. of the initial cost of the house, plus at least 1 per cent. in repayment, and as soon as the tenant has paid one-third of the value of the house it is transferred to him, *i.e.*, he then becomes "Grundbuchmässiger Eigentümer." The houses built vary in price between 3,000 and 5,000 M. The value of the site is usually from 400 to 700 M., land costing from

60 to 75 pf. per sq. metre in the vicinity of Gronau. The total price of a house may not exceed 6,000 M. The municipality of Gronau guarantees the money advanced by the insurance commission.

It is fortunate that such schemes for the better housing of the operatives exist in one form or another in almost all the cotton-towns and villages in Germany, for it is to such enterprises only that the German cotton operative can look, if the English ideal of one house, one family, is ever to be realised. To the speculative builder the construction of cottages to accommodate one family only, seems to hold out no prospect of profit and the continued rise in the prices of building materials makes it more and more unlikely that it will do so in the future.

Apart from houses to accommodate families many employers have built boarding-houses for girls. Sometimes these have been intended for labour imported from other countries, from Italy or Bohemia. Such imported labour, however, it has usually been found difficult to keep for any length of time, in spite of the agreements for a definite period, which are customary. In other cases the boarding-houses provide a comfortable home for German girls coming from a distance. Each girl usually has a separate cubicle and pays about 1,75 M. per week for lodging and morning and evening coffee. In most cases a bright room is provided where meals are served and entertainments are given. The town of München-Gladbach has found a new field for municipal trading in constructing one of these homes, an example which has been followed at Bocholt, where the home has been placed in the hands of a Roman Catholic sisterhood.

Besides the housing-question the question of providing cheap provisions and other commodities has occupied the attention of employers. It has been mentioned that some mills maintain a co-operative store in the "Arbeiterkolonie" of the mill. A large number of mills make wholesale purchases of coal, wood, fish, milk, butter, and

other articles, and then retail these at cost price. Anti-truck legislation is very strict, and an employer is forbidden to make any profit by such transactions, but the law allows him to deduct the value of any articles supplied in this manner, just as he is allowed to deduct the rent of a house let to his employee, when he pays him his wages. Many mills, especially in Southern Germany, also provide meals at cost price or under to operatives coming from a distance.

Yet another form of welfare-work consists of arrangements for savings on the part of the operatives, partly on a compulsory, partly on a voluntary basis. The legal position with regard to compulsory deductions from wages is apparently a little doubtful, but the authorities do not appear to interfere. To take an instance of a compulsory savings scheme, a firm deducts 10 per cent. from the wages of its unmarried employees and 5 per cent. from the wages of married employees, and pays 6 per cent. interest on the sums thus deducted. As soon as an account reaches 2000M. all further sums are credited in the voluntary savings bank of the same firm, where only 5 per cent. per annum interest is paid. Money may only be withdrawn from the compulsory savings bank with the consent of the "council of elders," which is a committee of the most respected workpeople of the mill. The deposits in the two savings banks are invested by the firm in mortgages and gilt-edged securities. They are under no circumstances used in the business. In practice such a system is bound to have a good effect in inculcating habits of economy and to prove a great boon in times of difficulty. Arrangements for voluntary saving without compulsory saving are not uncommon but they have proved far less successful. Even in cases where the rate of interest paid by the employer is as high as 6 per cent., the actual amount of it is so small that it proves but a weak temptation.

Some employers also offer facilities for making advances

to their employees. According to the rules of one mill, loans will be made to employees if two other employees will act as sureties!

It remains to speak of the activities of the state for the betterment of the conditions of life and work of the operatives.

So much has been written recently of the German scheme of National Insurance that it would be superfluous to give any full account of it here. As is well known, the employers in the various trades in each district form an association for the purposes of accident insurance in their trade. The cotton trade in this connection does not form independent associations of its own but is grouped together with the other textile trades in the "Textilberufsgenossenschaften." As regards sickness insurance it should be noted that practically all concerns in the cotton industry are large enough to have a "Krankenkasse," or sickness insurance organization of their own. This "Krankenkasse" is administered by a committee representative of employers and employees. By this means employers and employees are brought into contact—a circumstance in which the founders of the German insurance scheme centred high hopes—and secondly a representative committee of workpeople comes into existence, which is of great importance, seeing that the employers refuse to negotiate with the paid representatives of the labour organizations. The importance attached to this operatives' committee by the employer as well as by the operatives themselves varies considerably from mill to mill, but there is a distinct tendency to increase the scope of its activities. That the benefits of the National Scheme are in many cases inadequate is shown by the extent to which employers and trade unions are attempting to supplement the same, more particularly the sickness and maternity benefits.

The German "Gewerbeordnung" need to-day fear no comparison with the factory acts of other countries. The

fact that the industrial development of Germany was comparatively belated naturally postponed the introduction of many measures, but any lost ground has by now been regained.

Since January 1910, women employed in factories are not allowed to work longer than 10 hours on week days and 8 hours on Saturdays. Owing to the large proportion of women employed in cotton spinning and weaving, this ordinance has the effect of practically limiting the week in such concerns to 58 hours. Many mills only work 56 hours, but others—not a large number—by a skilful arrangement of the intervals allowed to the women, keep the machinery running for 11 hours per day. This is true especially of print-works, bleach-works, etc., where less women are employed. The 10 hours day was not gained without a struggle. The devastating Crimmitschau strike of 1903 was fought under the device: "An hour for us! An hour for our family! An hour to live!" The strike was lost, but the introduction of the 10 hours day was from that date only a question of time. It was on this account that the manufacturers of Augsburg, when threatened with a strike in 1906, at once granted the 10 hours day. They were afraid that they would be liable, even if victorious, to be robbed of the fruits of victory by legislation. The moment chosen for making the 10 hours day universal in Germany proved highly opportune. Many mills were working short time and bad trade was a good excuse for not raising piece-rates. Time-rates, on the other hand, were not reduced but were left for 10 hours what they had previously been for 11 hours. The reduction in hours does not appear to have had a great effect on production. In the weaving branch especially most manufacturers are ready to admit that the difference has hardly been noticeable.

As regards young persons and children, young persons from 14 to 16 years of age may like women not be employed longer than 10 hours per day. Children under

13 may not be employed at all in factories, and children over 13 only if they are no longer liable to attend school. Children from 13-14 years may not be employed longer than 6 hours.

Women in the case of a confinement must remain away from work for 8 weeks in all, of which at least 6 weeks must be after the confinement. Women who have a household to manage may claim to leave work half an hour before the dinner interval, unless such interval lasts at least an hour and a half. This last is a privilege which is naturally unpopular with employers, and women rarely, if ever, venture to make use of it.

Strict regulations are laid down in the "Gewerbeordnung" with regard to fines. The offences for which they are imposed, their amount, and the manner in which they are calculated, has to be stated in the "Arbeitsordnung," or rules, which have to be posted up in a conspicuous place in the mill. Fines, except for a few special offences such as endangering the safety of the workers, may not exceed one half of the average daily earnings of the operative, and their proceeds must be expended for the welfare of the employees of the mills. They are exacted in almost all mills and are imposed for faulty work, disobedience, lateness at work and a variety of other offences. Their imposition is usually entrusted to the overlookers, which gives rise to a great deal of ill-feeling, and at times of labour disputes they are almost invariably brought up as a grievance.

In conclusion it is not proposed to put forward any view with regard to the relative happiness of the lives of English and German cotton operatives. Wages in Lancashire are higher and the temptations to spend also are much greater. The German operative is often far away from a town, and he has no "Wakes" but only a few isolated Saints' Days and Church holidays. His wife is a better house-keeper but she is less at home, for cases are rare where she does not accompany her husband to work.

The English operative has the tastes of the town, the German the tastes of the country. But all these differences of opportunity and environment, of temperament and outlook are at bottom differences in age. The German operative class is of recent growth, the English has a century-old tradition behind it. The road along which they travel is the same road. The Germans, although still far behind, are travelling with rapid strides. In parting we may wish them "God speed."

TABLE SHOWING WAGES PAID IN THE
GERMAN COTTON INDUSTRY

WAGES IN THE GERMAN

	Rhenish Prussia			Saxony.	Als-
	District.	and Westphalia.			
SPINNING MILLS:—					
Card-room and Blow-					
ing-room:—					
men	...	17-19 m.	...	16-18 m.	16-
women	...	14-16 „	...	12-14 „	12-
grinders	...	20-22 „	...	20-22 „	20-
Drawing frames	...	16-18 „	...	16-18 „	13-
Flyer-frames	...	15-20 „	...	14-19 „	14-
Mules:—					
spinners	...	25-32 „	...	25-30 „	28-
big piecers	...	15-20 „	...	17-19 „	17-
little piecers	...	10-14 „	...	10-13 „	10-
Ring-frames	...	16-18 „	...	13-17 „	15-
Doffers	...	9-12 „	...	9-11 „	9-
MANUFACTURING:—					
Winding	...	14-17 „	...	14-17 „	14-
Beaming	...	16-19 „	...	16-18 „	16-
Sizing	...	21-24 „	...	22-23 „	21-
Weaving:—					
2 looms	...	12-16 „	...	12-15 „	12-
3 looms	...	17-18 „	...	15-18 „	16-
4 looms	...	22-24 „	...	20-25 „	20-
Domestic weavers					
Tacklers	...	25-30 „	...	25-30 „	25-

Overlookers in spinning and in weaving mills earn from 30—45 M. according to the duties assigned to them.

The figures given above are intended to give the general level of earnings in the more important centres of each district. In isolated mills in the country villages wages are often as much as 10 per cent. less.

The table is compiled from figures given by employers and trade unions. The social democratic unions have collected and published wages-statistics but these are incomplete or unreliable,

COTTON INDUSTRY.

COTTON INDUSTRY.						Average Wages earned in Lancashire.
age.	Bavaria and Württemberg.			Silesia.		
18 m.	...	15-18 m.	...	12-14 m.	...	19/-—27/-
15 „	...	12-14 „	...	9-11 „	...	10/6—14/-
23 „	...	21 „	...	14-17 „	...	25/6—29/-
16 „	...	14-17 „	...	10-12 „	...	17/-—21/-
18 „	...	15-18 „	...	9-13 „	...	17/-—19/-
32 „	...	26-30 „	...	20-25 „	...	36/-—39/- (medium counts)
20 „	...	15-18 „	...	14-16 „	...	17/-
13 „	...	10-12 „	...	8-11 „	...	8/-—11/-
18 „	...	14-18 „	...	9-13 „	...	18/-—20/-
11 „	...	9-10 „	...	7-8 „	...	8/-—11/-
17 „	...	14-16 „	...	9-12 „	...	14/-—20/-
19 „	...	16-18 „	...	9-12 „	...	18/-—24/-
23 „	...	21-24 „	...	15-16 „	...	45/-—52/- women
14 „	...	12-16 „	...	10-13 „	...	13/-—15/-
18 „	...	17-19 „	...	11-15 „	...	19/6—22/6
25 „	...	20-25 „	...	— „	...	26/-—30/-
				6-10 „		
30 „	...	25-30 „	...	20-25 „	...	45/-—60/-

since as yet far too small a proportion of the members fill in the cards.

The weavers' wages are those earned on plain-cloths, twills, etc., and narrow coloured goods. The average wage of women-weavers is near the lower figure, as they are usually given the lighter and less remunerative work. It should be borne in mind when comparing the figures with the earnings of Lancashire weavers, that four-loom weavers are in Germany comparatively scarce.

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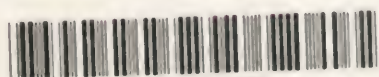
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